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ABSTRACT

Despite similar cultural roots and standards of living, the secondary education systems of France, the Netherlands, England, Scotland, and the United States produce remarkably different levels of achievement in mathematics and science. An examination of achievement at a given age shows that the French and Dutch have learned the most, Americans the least, and British somewhere in between. Section 2 examines the proximate causes of achievement differentials among the French, Dutch, British, and American secondary students. It concludes that the achievement differences are caused by differences in the quality of teacher inputs and the quality and quantity of student time-and-effort inputs. Section 3 argues that changes in the structure of rewards are as important as changes in the level of rewards. A conclusion is that students, parents, teachers, and administrators in France and the Netherlands have much stronger incentives for academic excellence than do their counterparts in the United States. The French and the Dutch models of secondary education combine in one system many of the most drastic reforms that have been proposed for the United States: (1) externally set, subject-specific achievement exams taken by almost all high school students; (2) parental choice of upper-secondary school and special field of study with money following students; (3) 30 percent higher teacher salaries and rigorous standards for entry into secondary school teaching; (4) high standards for admission to postsecondary education; and (5) mastery learning with strictly enforced sanctions in cases of failure. Four exhibits and 6 tables are included. The appendix describes the structure of the French secondary system. (Contains 70 references.) (LMI)

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IMPACTS OF SCHOOL ORGANIZATION & SIGNALLING ON INCENTIVES TO LEARN

Working Paper 93-21

John Bishop

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IMPACTS OF SCHOOL ORGANIZATION AND SIGNALING ON INCENTIVES TO LEARN IN FRANCE, THE NETHERLANDS, ENGLAND, SCOTLAND AND THE UNITED STATES

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Working Paper # 93-21

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IMPACTS OF SCHOOL ORGANIZATION AND SIGNALLING ON INCENTIVES TO LEARN IN FRANCE, ENGLAND, SCOTLAND, THE NETHERLANDS AND THE UNITED STATES

Despite similar cultural roots and standards of living, the secondary education systems of France, the Netherlands, England, Scotland and the United States produce remarkably different levels of achievement in mathematics and science. When one examines achievement at a given age, the French and Dutch have learned the most, Americans the least and the British are somewhere in between. In reading ability, however, the students of the five countries are roughly equal. High achievement in France and the Netherlands has not been achieved by pushing slow students out of upper secondary school. The ratios of upper secondary students to the age cohort are as high in France and the Netherlands as in the U.S. and far ahead of England and Scotland. What accounts for this pattern?

I. DIFFERENTIALS IN ACADEMIC ACHIEVEMENT

The differences in achievement levels at age 13, 14 and 15 are summarized in Table 1. The table presents data from studies conducted in the 1980s and 1990s comparing France, the Netherlands, England, Scotland and the United States.

Mathematics: In the 1981/82 study of mathematics achievement of 13-14 year olds conducted by the International Association for the Evaluation of Educational Achievement (IEA), Dutch and French 13-14 year olds ranked number 2 and 3 in the world (behind only Japan). Of the 17 industrialized nations participating in the study of 13-14 year olds, Americans were ranked 12th, English 11th and Scots 10th.[1] After adjustment for small differences in mean age, American 14 year olds scored about 40 percent of a U.S. standard deviation (or roughly 1.3 U.S. grade level equivalent) below French and Dutch students of comparable age.

The 1991 International Assessment of Educational Progress (IAEP) mathematics study obtained similar results. The gap between French and American 13 year olds was 45

percent of a U.S. standard deviation (about 1.5 U.S. grade level equivalents).[3]

The performance gap between the American and European students grows even larger during upper secondary school. Evidence of this can be found in Table 2. The Americans who participated in the Second International Math Study were high school seniors in college preparatory math courses like trigonometry, precalculus and calculus. This very select group, representing 13 percent of American 17-18 year olds, got 39.8 percent of the questions correct. Scottish students who were one year younger on average and who represented 18 percent of their age cohort got 42.8 percent correct. The 6 percent of English students studying mathematics at A level got 59.8 percent correct. IEA data on achievement in mathematics and science is not available for French and Dutch students completing secondary school. However, substantial proportions of the age cohort specialize in mathematics and science (20 percent of French youth are in the mathematics and science lines known as C, D or E of the *lycee general*) and the questions they are asked on their final examinations suggest that these students achieve at a very high level. In place of data on our target nations, Table 2 presents data on Belgium and Finland. Achievement levels clearly exceeded those in the U.S. by a wide margin (McKnight et al 1987).

Science: In the 1983 IEA study of science achievement of 14-15 year olds, Netherlands ranked 3rd and the U.S. ranked dead last among 17 industrialized countries. After a rough adjustment for age differences, American students lagged slightly more than a half a standard deviation (about two U.S. grade level equivalents) behind Dutch students. The raw data on achievement place the English 15th in the ranking, but their tested students were younger than in most other countries. Adjusting for age differences, England falls in the middle of the 17 industrialized countries and about one-quarter of an SD above American students.[5]

The 1991 IAEP science study of 13 year olds also found that U.S. students were behind English, Scotch and French students, but the differences were small and not statistically significant.[6]

Few American high school students study science in depth (see Table 2). Only 1 or 2 percent of the age cohort take two years of physics or two years of chemistry. Despite the highly selected nature of this group (many of whom were taking the subject for Advanced

Placement college credit), only 47.5 percent of the questions were answered correctly on the IEA physics exam and only 37.7 percent were correct on the IEA chemistry exam. The 4 or 5 percent of the age cohort of English youth who in their 13th year of schooling were studying these subjects for their A levels got 62.4 percent and 69.3 percent correct respectively. Even larger shares of the age cohort study these subjects in Finland and Norway and these students perform quite creditably. For example, the 16 percent of Finns taking chemistry knew almost as much chemistry as the highly selected group of Americans studying the subject (Postlethwaite and Wiley, 1992).

Reading: Two studies have been conducted which compare the reading ability of students in these nations. Robert Thorndike's study of reading comprehension in 1971 found that American 14 year olds were equal to the Scottish students and about one-fifth of a U.S. standard deviation better than English and Dutch students. With respect to word knowledge, however, Dutch students were about one-fifth of an SD above American students who in turn were 10 to 16 percent of an SD above the British students.[5]

In the 1990/91 IEA study of reading achievement, French 9th graders ranked second among 23 industrialized countries, substantially above American and Dutch students. These results are misleading, however, because the French ninth graders were 1.1 year older than the Dutch eighth graders studied and .4 years older than the American ninth graders studied. Elley (1992) has carefully adjusted the reading scores for age differences and shown that many of the differences between countries are age related. Using his adjusted scores, American students clearly were reading significantly better than Dutch and French students at age 9. However, by age 14 there were only trivial differences between the three countries (see column 3 of Table 1) and the U.S ranks 14th (and France 9th) among the 23 industrialized nations.[6]

II. TEACHER QUALITY, TIME, AND ENGAGEMENT: The Proximate Causes of Achievement Differentials

What causes these large differences in achievement at the end of secondary school. This section of the paper examines the proximate causes of the achievement differentials. I conclude that these achievement differentials are caused by differences in the quality of

teacher inputs and the quality and quantity of student time and effort inputs. There remains, however, the question of why the students, teachers, parents and school administrators of different countries behave so differently? Why, for example, is student engagement in learning lower in the U.S. than in France and The Netherlands? These issues will be tackled in Section III.

The discussion of the proximate causes of higher achievement of Dutch and French students is organized around five topics--each of them a proposed explanation of achievement differentials across countries:

1) Restricted access to secondary education
2) Expenditure per pupil
3) Teacher quality and salaries
4) Time devoted to instruction and study
5) Engagement--Effort per unit of scheduled time

2.1 Access--Numbers of Students and Graduates

It is sometimes said that low achievement is the price one must pay for greater access. Thirty years ago American youth were considerably more likely to complete upper secondary school than French and Dutch youth. This is no longer the case. Table 3 presents comparative data on the proportion of youth who are participating in and completing secondary education. In 1988/89 the ratio of upper secondary students to population of the theoretical age group was 91.1 percent in the Netherlands, 84.9 percent in France, 76.9 percent in the United Kingdom and 90.2 percent in the United States. Enrollment rates for 17 and 18 year olds had a similar pattern. Enrollment rates for France, the Netherlands and the United States were similar and dramatically higher than for the United Kingdom. The ratio of secondary school diplomas awarded to population was 84.5 percent for France, 56.9 percent for the Netherlands and 65.1 percent for the United Kingdom. Despite the minimal standards for getting a diploma in the United States, the ratio of secondary school diplomas awarded to population 18 years of age was 73.7 percent in 1988, slightly below its level in 1968.[7] Standards were lowered in the 1970s, but access did not improve. Only the United Kingdom exhibits the expected tradeoff between access

and achievement. The students preparing for A level exams achieve at a very high level, but they represent a decided minority of the age cohort. Thus, differences in access to secondary school do not account for the differences in achievement between the France, the Netherlands and the U.S.

2.2 School Expenditures

Teachers are more expensive in America than in Europe because college graduates (the pool of workers from which teachers must be drawn) are better paid in the U.S. Since labor compensation accounts for the bulk of education costs, the proper deflator for schooling expenditure is not a general cost of living index, but a wage index that reflects the cost of recruiting competent teachers. In the absence of such an index, deflation by GDP per worker is the next best thing. OECD's estimates of the ratio of public expenditure on secondary education per student to GDP per capita and GDP per worker are given in Table 4. Expenditure per student deflated by GDP per worker is higher in the U.S. than in France, the Netherlands and the United Kingdom.

Even with a correct deflator, however, expenditure would be a problematic indicator of real public investment in academic instruction. Countries differ in how they budget school costs and assign schools different functions some of which have little to do with academic instruction.[9] American schools often perform functions such as after school sports, bus transportation, psychological counseling, medical check ups, after school day care, hot meals, and driver education that many other countries assign to other institutions. Costs of transportation are generally not included in school budgets in Japan and Europe where students use the public transportation system to go to school. In many European countries after-school sports are sponsored and organized by local government, not the school. This removes the capital costs of extensive school-based sports facilities and the salaries of coaches and maintenance personnel from the school budget. The additional functions performed by American schools are one of the reasons why non teaching staff account for a much larger share of employment in U.S. public education than in most other countries (see row 3 of Table 4, OECD 1992 Table P9.e). If adjustments were made for service mix and a cost of education index reflecting compensation levels in alternative college level

occupations were used to deflate expenditure, the U.S. advantage in spending per pupil would probably drop somewhat but not enough to change the basic picture. Lower overall spending levels are not the reason why American achievement levels are below those in Northern Europe.

American education budgets are spent differently than European education budgets. Computers are more plentiful and physical facilities are generally better. Libraries are larger and textbooks more colorful and up to date. In part, this reflects the fact that books, computers and buildings are cheaper (relative to teachers of constant quality) in the United States. Student-teacher ratios in U.S. secondary schools, however, are close to the OECD average. They are below those in The Netherlands and the United Kingdom but above those in France (see row 4 of Table 4).

What is unique about the way Americans organize and budget their schools is the heavy investment in nonteaching staff and the relatively low levels of teacher compensation. Nonteachers account for one half of the employees in public education in the U.S. Nonteachers account for less than one-fifth of employees in the Netherlands and only 26 percent of employees in France (see row 4 Table 4).[9]

2.3 Teacher Quality and Compensation

The quality of the people recruited into teaching is very important. The teacher characteristic that most consistently predicts student learning are tests assessing the teacher's general academic ability and subject knowledge (Hanushek 1971; Strauss and Sawyer 1986; Ferguson 1990, Ehrenberg and Brewer 1993, Monk 1992).

Secondary school teaching is not a prestige occupation in the United States and it apparently does not attract the kind of talent that is attracted into the profession in France and the Netherlands. Since minimum standards for admission to university are considerably higher in Europe, the university graduate pool from which European secondary school teachers are recruited is better educated on average than the college graduate pool out of which American teachers are recruited. Furthermore, American teachers are generally not the most talented members of the pool of college graduates. In 1977-78 the Math SAT of intended education majors was 46 points below the overall average, 118 points below

engineering majors and 144 points below majors in the physical sciences. The Verbal SAT of intended education majors was 33 points below the overall average, 32 points below arts and humanities majors and 42 points below social science majors. (NCES 1992, Table 124). Britain is similar to the U.S. in this respect; those entering education programs have significantly lower A level grades than average for university entrants (O'Leary 1993).

In France, by contrast, university graduates are not able to obtain a teaching post in secondary education without first passing a rigorous subject matter examination. In 1991 only 31.3 percent of those who took the written exam for the *Certificat d'Aptitude au Professorat de l'Enseignement du Secondaire* (CAPES) passed it. The best teaching jobs go to those who pass an even more rigorous examination, the *Agregation Externe*, which had a pass rate of 17.7 percent in 1991.[17] French and Dutch secondary school teachers tend to be recruited from the middle (not the bottom half) of a pool of graduates of tertiary education which is in turn a highly selected sample of the nation's population.

The graduates of the best American universities typically do not enter secondary school teaching because the pay and conditions of work are relatively poor.

Compensation: Data on the relative compensation of secondary school teachers is presented in Table 5. American upper secondary teachers start at a wage that is 14 percent below that of the average worker and after 15 years of experience they earn only 33 percent more. Starting salaries are equally low in England, but in France starting salaries are 6 percent above the all worker average and in The Netherlands they are 39 percent higher. In France, England and Scotland upper secondary school teachers with 15 years of experience are paid 61 to 63 percent more than the average worker and in The Netherlands they are paid 132 percent more.[18]

The lower pay in the United States is not compensation for more attractive conditions of work (see Table 5). French secondary school teachers have fewer weeks of teaching than American teachers. They meet classes of comparable size--about 26 students per class--but American teachers have more lessons to teach--25 per week compared to 16 to 22 per week in France. English and Scottish upper secondary teachers teach two more weeks per year than American teachers. Their contact hours per week are similar to those required of American upper secondary teachers, but class sizes are substantially smaller. Only Dutch teachers have heavier teaching loads than American teachers--class sizes are

comparable, but clock hours of instruction per week are 10 percent higher and staff are obligated to be in school one extra week (Nelson and O'Brien 1993).

When the salaries of college graduates are compared, education majors in the U.S. come out at the very bottom. Despite recent increases in teacher salaries the gap between teachers and other college graduates has remained large. Data from the 1984 and 1987 Surveys of Income and Program Participation (SIPP) indicate that for 18 to 64 year olds, the wage premium over education majors was 77 percent for physical science majors and 129 percent for economics majors. Social science majors earned 39 percent more and humanities majors earned 8 percent more than education majors. Relative to individuals with graduate degrees in education, those with MBAs earned 64 percent more, those with law degrees earned 104 percent more, and those with advanced degrees in physical science earned 75 percent more (Kominski 1990).

European nations pay their teachers better. In the United Kingdom in 1981 starting salaries of university graduates entering teaching were 30 percent higher than for graduates entering accounting, equal to those obtaining systems analyst jobs and only 3 percent below starting salaries of physical scientists (Dalton and Makepeace 1990, p. 241).[12] By comparison, in the United States starting salaries of mathematics and physical science majors who entered teaching were 42 percent below the salaries of those who obtained computer programming and system analyst jobs and 35 percent below the starting salaries of those obtaining a job in mathematics or physical science (NCES 1993b, p. 26).

Since Americans with university training in mathematics and science can earn much more in non-teaching jobs, those with talent in these areas are difficult to recruit into high school teaching. This results in most teachers being poorly prepared in science and mathematics. This may help explain why American students lag behind French and Dutch students in mathematics and science, but not in reading.

The low status and low salaries of American teachers are part of the reason why achievement is low in American schools. **Why does American society pay its secondary school teachers so poorly?** That is a question that will be taken up later in the paper.

2.4 Time Devoted to Instruction

Numerous studies have found learning to be strongly related to time on task (Wiley

1986; Walberg 1992). How do the five countries differ in the time that students spend in classrooms and doing homework? Table 4 reports the results of a variety of studies that compare time devoted to instruction. While estimates vary across studies, the pattern is clear: the total amount of time spent in secondary school was significantly higher (an average of 9 to 10 percent higher) in France, Netherlands and Scotland than in the U.S. English students, by contrast, spent 6.7 percent less time on average in school than U.S. secondary school students.

Does allocating additional instruction time to a subject improve performance? Yes, it appears so. Three illustrations of the how the allocation of time to a subject influences achievement are given below.

1. Americans and Reading: Americans get considerably more language arts instruction in primary school than students in Europe and this probably accounts for the very strong reading achievement of American 9 year olds. In ninth grade, however, language arts instruction is allocated less time than in Europe and by this grade the American advantage in reading ability has disappeared (Lundberg and Linnakyla 1992).

2. Improvements in Dutch Performance in Science: In 1971 Dutch teachers allocated only 2 percent of time in 5th grade to science instruction and only 7 percent of time in 9th grade to science (Passow et al, 1976) and student performance levels were substantially below those in the U.S. and Britain. U.S. achievement levels exceeded Dutch achievement levels by one-third of a standard deviation. (Comber and Keeves 1973, p 159). In 1982, however, Netherlands spent a remarkably high 25 percent of 9th grade instruction time on science (compared to 20 percent for the U.S. and 10 percent in England). As a result, science achievement in The Netherlands was more than one half of a U.S. standard deviation higher than for English and American students.

3. French Strength in Mathematics but not Science: The 1991 IAEP study found that while American and English lower secondary schools devoted equal time to mathematics and science, French lower secondary schools spent 3.83 hours per week teaching mathematics and 2.8 hours a week teaching science. Consistent with this time allocation differential, mathematics was the field where French students really excelled over American and British students, not science.

Differences in instruction time explain some achievement differentials between countries. But they do not explain the generally poor showing of U.S. lower secondary school students in mathematics and science. While American students spend less total time in school, they tend to get more mathematics and science instruction time than French,

Dutch and Scottish students. Heavy European time commitments to foreign language study tend to crowd out mathematics and science instruction. In lower secondary school, all British students study at least one foreign language and French and Dutch students generally study two. In America, by contrast, few lower secondary school students study a foreign language and, by the end of high school, graduates have taken an average of only 1.46 years of foreign language (NCES 1992, p. 131).

European students learn mathematics and science more thoroughly than American students even when they spend less time on it. For example, in the IAEP study, mathematics instruction time was the same in France and the U.S., yet French students knew about 1.47 U.S. grade level equivalents more mathematics than American students. In science, by contrast, instruction time was one hour per week less in France, yet Americans still lagged about one-third of a U.S. grade level equivalent behind French students. **Why does an hour of instruction in French and Dutch classrooms produce more learning than in American classrooms?** Could heavier homework assignments be the explanation?

Homework: Harris Cooper's (1989) meta-analysis of randomized experimental studies found that students assigned homework scored about one-half a standard deviation higher on post tests than students not receiving homework assignments. The impact of homework on the rate at which middle school students learn was also significant, though somewhat smaller. Non-experimental studies employing IEA and IAEP data come to similar conclusions.

French lower secondary school students do spend more time doing mathematics homework and homework of all types. For example, 55 percent of their 13 year olds report doing over 2 hours of homework a night, compared to 30 percent in the United States and England and only 15 percent in Scotland. This is consistent with their lead in mathematics achievement. In science, however, there is no evidence that Dutch and French students get more homework than American students. Furthermore, English and Scottish students do less homework (and have less instruction time) in mathematics and science than American students and yet outperform them. **Why does an hour of instruction and homework time have larger learning effects in England, France and The Netherlands than in America?**

2.5 Engagement--Effort per Unit of Scheduled Time

Classroom observation studies reveal that American students actively engage in learning activities for only about half the time they are scheduled to be in a classroom. A study of schools in Chicago found that public schools with high-achieving students averaged about 75 percent of class time for actual instruction; for schools with low achieving students, the average was 51 percent of class time (Frederick, 1977). Overall, Frederick, Walberg and Rasher (1979) estimated 46.5 percent of the potential learning time is lost due to absence, lateness, and inattention.

Just as important as the amount of time participating in a learning activity is the intensity of the student's involvement in the process. At the completion of his study of American high schools, Theodore Sizer (1984) characterized students as, *"All too often docile, compliant, and without initiative (p. 54)"* John Goodlad (1983) described: *"a general picture of considerable passivity among students...(p. 113)"*. The high school teachers surveyed by Goodlad ranked "lack of student interest" as the most important problem in education.

The sentiment expressed by one student, *"You're going to work your whole life...[High school should be a place to] enjoy life and have fun"* (Powell et al. 1985, p 43) is quite common. Sixty-two percent of 10th graders agree with the statement, "I don't like to do any more school work than I have to" (Longitudinal Survey of American Youth or LSAY, Q. AA37N).

While formal studies comparing U.S. and European ratios of on-task time to scheduled time are not available, people who have visited classrooms in both Europe and the U.S. report that European teachers are less likely to be talking about extraneous matters and European students are more likely to be paying attention and doing what they have been assigned. My visits in European and the U.S. classrooms generated similar impressions.

Why are European teachers more likely to be on task? Why are European students more likely to be paying attention? Why do European teachers have higher expectations of their students?

III. SIGNALLING AS ULTIMATE CAUSE
External Examinations as Standard Setters

When questions such as these are put to French citizens and educators, they point to the high standards and pervasive influence of the *Baccalaureat*. In 1992, 71 percent of the age group took a Bac exam and 51 percent passed. Thirty-eight percent of the *Baccalaureats* awarded were *Bac Technologique or Bac Professionel* (ie. in vocational lines) (Ministere de L'Education Nationale 1993). This was a major accomplishment, for Bac exams are set to a very high standard.[15] The three year *lycee* programs which prepare 43 percent of the age cohort for the exam for the *Bac General* are quite rigorous. Their students are typically assigned three hours of homework per night. The Bac exams taken in one's area of concentration are roughly comparable to the AP exams taken by American students seeking college credit for high school work. Cornell University, for example, generally awards advanced placement credit to recipients of the *Baccalaureat General*.

The Bac is a passport which improves access to well paid high status jobs. It entitles one to attend university and influences the program one is admitted to. The payoff to higher education is high, so access to university is highly prized. The job market also prizes young people who have passed the Bac. There are alternative lower level examined qualifications for employment such as the *Brevet d'Enseignement Professionnel* (BEP) and the *Certificat d'Aptitude Professionelle* (CAP), but the *Baccalaureat* confers greater access to preferred jobs. Those without any qualifications have experienced very high unemployment rates in recent years.

Dutch university graduates earn 71 percent more than secondary school graduates at age 45 to 64 (OECD 1992, Table R7), so access to university is highly prized in the Netherlands as well. Examinations set by the Ministry of Education influence access to postsecondary education, so the high achievement levels of Dutch students in mathematics and science can be explained in the same way.[16] In both France and the Netherlands questions and answers are published in the paper and available on video text. The published exams signal the standards that students and teachers must aim for.

Nine-tenths of English youth now take the General Certificate of Secondary Education (GCSE) exam at the end of 11th grade and an increasing number take A levels

two years later. Scotland also has a system of external examinations. For the United Kingdom as a whole, the ratio of the number of school leavers passing at least one A level (or the Scottish equivalent) to the number of 19 year olds was 23 percent in 1991 (Government Statistical Service 1993, p. 8). University graduates earn 63 percent more than secondary school graduates at age 45 to 64 (OECD 1992, Table R7). Performance on GCSE and A level examinations and the equivalent Scottish exams determine whether one can attend university and which university and program you are admitted to. Grades on the GCSE and A level exams are included on resumes and requested on job applications, so employment opportunities depend on school results as well (Raffe 1984). These examination systems are probably one of the reasons why British students outperform American students at the end of secondary school.

These examples suggest that high standards examination systems serving important gate keeping functions contribute to higher levels of academic achievement.

Increasingly, American educators and policy makers are recognizing the disincentive effects of the American propensity to ignore or downplay previous academic achievements when making decisions about access to postsecondary education and preferred jobs (Bishop 1990, 1993). For example, the Education Subcouncil of the Competitiveness Policy Council (a nonpartisan group appointed by the President and congressional leaders) recommended that "external assessments be given to individual students at the secondary level and that the results should be a major but not exclusive factor qualifying for college and better jobs at better wages (1993, p. 30)." They justified this recommendation by noting that:

> Moving to a standards driven education system in which only the adults in the system are held accountable will not convince students that they need to take school seriously. Working hard and achieving in school must count for them, too. And presently, high school students who plan to go on to college do not need to work hard and get good grades in order to achieve their goal. Except for the tiny percentage of kind who want to go to selective colleges, students know that, no matter how poor their grades, they will be able to find a college that will accept them. If most colleges continue to admit students who have done little work in high school, there is no reason to expect any change in student behavior.
>
> The vast majority of employers give exactly the same message to students going directly from high school to work: What you did in high school does not count.... Hard working kids do not...have an edge since few employers ever inquire about what courses a young applicant took or ask to see a transcript

(March 1993, p. 30).

External assessments of achievement that directly affect access to preferred educational and job outcomes clearly increase student rewards for studying. The structure of rewards for learning and, therefore, the incentive environment of students, teachers and administrators also change in fundamental ways. I will argue that changes in the structure of rewards are at least as important as the increase in the level of rewards for study. These issues will be discussed under seven headings:

3.1 Peer group norms
3.2 Teacher incentives
3.3 Administrator incentives
3.4 Competition among upper secondary schools
3.5 High standards in the external exams
3.6 *Redoublement*, grade repeating, as Mastery Learning and an Incentive to Study
3.7 Choice of Specialization as Goal Setting

3.1 Peer Group Norms

In the United States, the peer group generally tries to discourage academic effort. No adolescent wants to be considered a "nerd, brain geek, grade grubber or brown noser" or to be "acting White," yet that is what happens in most classrooms to students who study hard and are seen to study hard. Because the school's signals of achievement assess performance relative to fellow students through grades and class rank, not relative to an external standard, peers have a personal stake in persuading each other not to study.

A primary reason for peer pressure against studying is that pursuing academic success forces students into a zero-sum competition with their classmates. Their situation has many elements of the classic prisoner's dilemma game. Their achievement is not being measured against an absolute, external standard. In contrast to scout merit badges, for example, where recognition is given for achieving a fixed standard of competence, the school's measures of achievement assess performance relative to fellow students through grades and class rank. Students who study hard for exams make it more difficult for close friends (other members of the class) to get an A or be ranked at the top of the graduating class. Since devoting time to studying for an exam is costly, the welfare of the entire class is maximized if no one

studies for exams which are graded on a strict curve. The cooperative solution is "no one studies more than the minimum." Participants are generally able to tell who has broken the "minimize studying" code and reward those who conform and punish those who do not. Side payments and punishments are made in a currency of friendship, respect and ridicule that is not subject to a budget constraint. For most participants the benefits that might result from studying for the exam are less important than the very certain costs of being considered a "brain geek", "grade grubber," "brown noser" or "acting White," so most students abide by the "minimize studying" norm.

The peer norms that result are: *It is OK to be smart. You cannot help that. But, it is definitely not OK to study hard to get a good grade.* This is illustrated by the following story related by a Cornell undergraduate:

> *Erroneously I was lumped into the brains genus by others at [high] school just because of the classes I was in. This really irked me; not only was I not an athlete but I was also thought of as one of those "brain geeks". Being a brain really did have a stigma attached to it. Sometimes during a free period I would sit and listen to all the brains talk about how much they hated school work and how they never studied and I had to bite my lip to keep from laughing out loud. I know they were lying, and they knew they were lying too. I think that a lot of brains hung around together only because their fear of social isolation was greater than their petty rivalries. I think that my two friends who were brains liked me because I was almost on their level but I was not competitive (Tim 1986).*

Note how those who broke the 'minimize studying' norm tried to hide the fact from classmates. They did not espouse an alternative "learning is fun and important" norm.

The costs and benefits of studying vary across students because interest in the subject varies, ability varies and parental pressure and rewards vary. This heterogeneity means that some students break the "minimize studying" norm. When they are a small minority, they cannot avoid feeling denigrated by classmates. In the top track and at schools where many students aspire to attend competitive colleges, the numbers of such students are generally sufficient to create a sub culture of its own with its own norms denigrating those who do poorly on tests or who disrupt classroom activities. This is the structural basis of the "brains" and "preppie" cliques found in most American high schools. Most high school students, however, are in cliques that denigrate studying.

Peer pressure not to study does not derive from laziness. In jobs after school and at

football practice, American adolescents work very hard. In these environments they are part of a team where individual efforts are visible and appreciated by teammates. Competition and rivalry are not absent, but they are offset by shared goals, shared successes and external measures of achievement (i.e. satisfied customers or winning the game). On the sports field, there is no greater sin than giving up, even when the score is hopelessly one sided. On the job, tasks not done by one worker will generally have to be completed by another. For too many students in too many high schools, when it comes to academics, there is no greater sin than trying hard.

Peer pressure was one of the topics in my interviews of school staff and students in England, The Netherlands and France. The French educators I interviewed reported that peer pressure not to study occurred sometimes, but only in some of the classes in the lower secondary schools, not at the *lycee* serving upper middle class students that I visited. It appeared to be mild by American standards. In upper secondary schools particularly in the math-science line, the peer pressure was in fact to excel. Discussions with English and Dutch students and educators produced similar observations.

3.2 Teacher Incentives

Most American secondary school teachers do not feel individually accountable for the learning of their students. Unionization is not responsible for this phenomena, for unionized European and Japanese secondary school teachers feel accountable for the learning of their students. The lack of accountability for learning stems from: (1) the rarity of examinations assessing student achievement in particular subjects relative to an external standard, and (2) the fact that most secondary school students receive instruction in a given subject from many different teachers. Only coaches, band conductors and teachers of advanced placement classes are exceptions to this norm. They teach in environments where student achievement is visible to parents and colleagues and as a result feel accountable for outcomes.

In France and the Netherlands, by contrast, students who are preparing to take a particular exam at the end of their secondary education typically remain together in one class and are taught by the same teacher in successive years. Teacher continuity is also the norm in primary school. The French 4th grade classes tested in the IEA study of reading

achievement had the same teacher for an average of 2.4 years (see the bottom row of Table 6). The Dutch 3rd grade classes had had the same teacher for 1.7 years. The American classes had had the same teacher for four-fifths of a year.

Since important rewards accrue to those who pass or do well on these exams, everyone takes them very seriously. The number of students taking and passing each exam is public knowledge within the school and among parents. Teachers' reputations are significantly affected by exam results. Responding to such informal pressures, upper secondary school teachers strive to prepare their students for the external exam.

American teachers are also expected to insure that most of their students pass, but they are free to accomplish this goal, if they choose, by lowering the passing standard.

Teachers who set expectations too high get in trouble. For example, Adele Jones, an Algebra II teacher in Georgetown Deleware, was fired because she failed too many of her students (42 percent one year and 27 percent the next). When students started picketing the school carrying "hastily scrawled signs with such slogans as *'I Failed Ms Jones' class and It Was My Fault'* and *'Just Because a Student is Failing Doesn't Mean the Teacher Is'* (Bradley 1993, p. 19)," the national news media took notice. According to Ann Bradley, the Education Week reporter covering the story:

> *Ms. Jones had the reputation for being a tough, dedicated teacher who expected a lot of her students. In return she gave a lot of herself, arriving at school at 7:15 every morning and staying until 6 at night to tutor students who were having trouble in her class* (Sept 19, 1993 p. 1).

The principal of the school justified his decision with the following:

> *"I have made it very clear that one of my goals is to decrease the failure rate, to make sure the kids feel good about learning, stay in class, stay in school and do well.... Math is just a big body of knowledge; what is Algebra II across the nation anyway?"* he asks. When he taught band, he adds, he certainly didn't expect kids to finish the year as musicians--but he *did* want them to know more about music than they did before....All the talk about preparing students for college struck him as *"ludicrous."* Instead the goal should be to keep students studying math (Sept 19, 1993 p. 19, 20).

Ann Mueller, the chair of the math department, said:

> *The impression I got from the hearing...is that the kids are* [viewed by the administration as] *boxes and its our responsibility as teacher to see how much*

we can stuff into that box, with no responsibility by the kids (p. 20).

The students interviewed by the reporter agreed with Ann Mueller. Senior Norman Kennedy said, the students who flunked Ms Jones class, "*were sleeping. They don't want to learn. They goof off, and they talk.*" Jodie Edwards, another senior, said:

> *All the principal talks about is making us feel good,...but I feel better when I know I actually did it than when I'm just given an A....I've been in classes where I just sit there and pass with no problem. But* [Ms Jones is] *the best math teacher I ever had. I actually learned something in her class, and I can remember it* (p. 20).

At the hearing Walter Hall Jr., a student who had flunked the course, testified:

> *"I guess some of it could be attributed to a lack of study, because I wasn't really like into the books hour after hour. But in the rest of my classes, I was doing fairly well, and it was only testing that gave me a problem."* He added that his parents had wondered how he could be getting such good grades in most classes without studying (p. 20).

"Ms. Jones had been on individual improvement plans for two years designed to bring her student-failure rate into line with the rest of the school's. She had made numerous changes in how she taught and grades had increased somewhat, *"I thought I had done what they wanted me to."* However, "unlike some teachers at the school, she refused on principle, to grade her students on a curve. She believed that students should be graded on what they had learned, not on what they learned in comparison to what others had learned--or not learned (Bradley 1993, p. 20)."

Ms Jones is unusual; most teachers realize that there is a limit to how many students they can fail and structure their grading to stay within the limit. More commonly, the struggle over expectations plays out in the privacy of the classroom. Sizer's description of Ms. Shiffe's biology class, illustrates what sometimes happens:

> *She wanted the students to know these names. They did not want to know them and were not going to learn them. Apparently no outside threat--flunking, for example--affected the students. Shiffe did her thing, the students chattered on, even in the presence of a visitor....Their common front of uninterest probably made examinations moot. Shiffe could not flunk them all, and, if their performance was uniformly shoddy, she would have to pass them all. Her desperation was as obvious as the students' cruelty toward her.* (1984 p. 157-158)

Theodore Sizer's (1984) description of Mr. Brody's class provides an example of how

teachers benefit from setting modest goals.

> *He signaled to the students what the minimal, the few questions for a test, were; all tenth and eleventh-graders could master these with absurdly little difficulty. The youngsters picked up the signal and kept their part of the bargain by being friendly and orderly. They did not push Brody, and he did not push them....Brody's room was quiet, and his students liked him. No wonder he had the esteem of the principal who valued orderliness and good rapport between students and staff. Brody and his class had agreement, all right, agreement that reduced the efforts of both students and teacher to an irreducible and pathetic minimum.*(p. 156)

Some exceptional teachers are able, through the force of their own personalities, to overcome the obstacles and induce their students to undertake tough learning tasks. But for most, the students' lassitude is demoralizing. All too often teachers compromise academic demands because the bulk of the class sees no need to accept them as reasonable and legitimate.

3.3 Administrator Incentives

The local political accountability of American schools more often than not leads to lower, not higher standards. A.B. Hollingshead documented cases of political interference in grading and school awards in his ethnography of a small Indiana town and its schools in 1941-42.[15] Two of the members of the school board that decided to fire Adele Jones were parents of students who "had not done well in her class (Bradley p. 21)." European countries opted for university selection systems based largely on external exams in part to avoid charges of favoritism.

External assessment changes the incentives facing school administrators. In the U.S. locally elected school boards and the administrators they hire (not state departments of education) make the thousands of decisions which determine academic expectations and program quality (eg. homework guidelines, whether to retain a popular but not very effective teacher, whether to raise wages so as to attract better teachers, etc.). When there is no external assessment of academic achievement, students at a school and their parents benefit little from administrative decisions which opt for higher standards, more qualified teachers or a heavier student work load. The immediate consequences of such decisions--higher taxes, more homework, having to repeat courses, lower GPA's, less time for fun courses, a

greater risk of being denied a diploma--are all negative.

When student learning is not assessed externally, the positive effects of choosing academic rigor are negligible and postponed. Since college admission decisions are based on rank in class, GPA and aptitude tests, not externally assessed achievement in high school courses, upgraded standards will not improve the college admission prospects of the school's graduates. Graduates will perform better in difficult college courses and will be more likely to get a B.A., but that benefit is uncertain and far in the future. Maybe over time the local reputation of the high school, and with it the admission prospects of future graduates, will improve because the current crop of graduates are more successful in local colleges, but that is even more uncertain and postponed.[10]

Few American employers pay attention to a student's achievement in high school or the school's reputation when they make hiring selections (Bishop 1990, 1993, Hollenbeck and Smith 1984). Those that do pay attention to achievement use indicators of relative performance such as GPA and rank in class rather than results on an external exam as a hiring criterion. Consequently, higher standards do not benefit students as a group, so parents as a group have little incentive to lobby strongly for higher teacher salaries, higher standards and higher school taxes. Employers who recruit from a local high school are often the only group with a real interest in general increases in achievement. Since, however, they pay a disproportionate share of school taxes, they tend to support only the policy options that do not cost additional money.

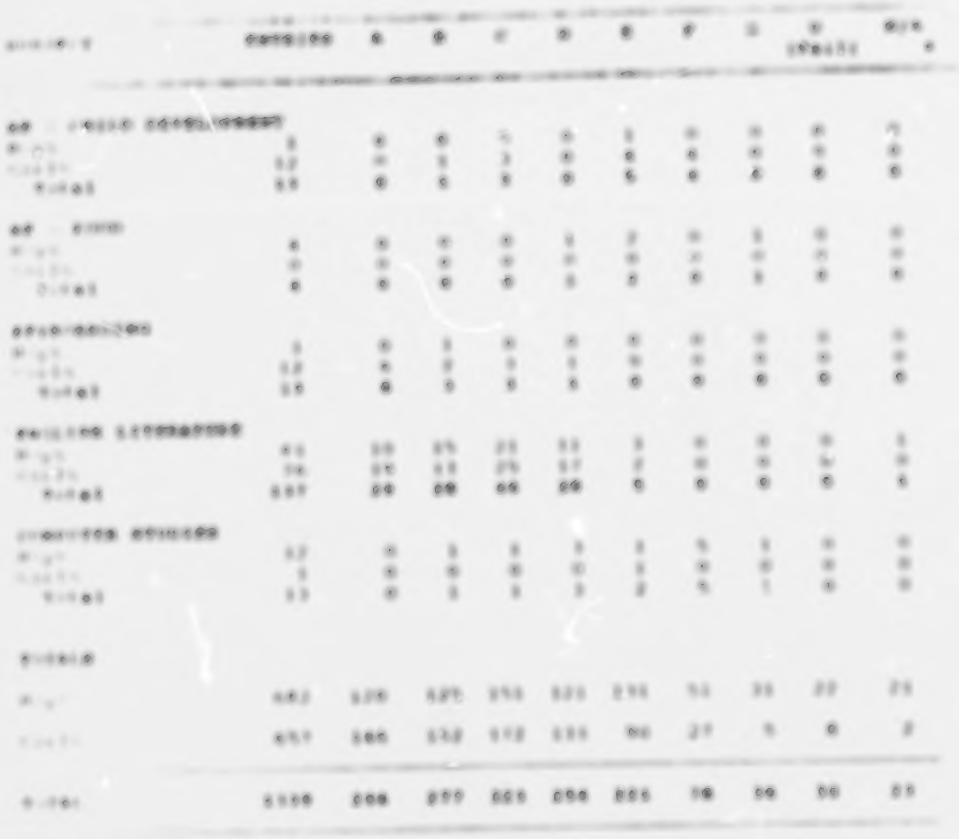
In Europe, by contrast, the record of each school on the external examinations (the numbers passing or getting high grades) are published in local and national newspapers. In England and Scotland, the results for each examined subject are printed in the school's annual report which is sent to parents of current and prospective students. Exhibit 1, 2 and 3 offer examples of such reports. Exhibit 3 from Haverstock School located in the Borough of Camden near downtown London even provides an indicator of value added--separate data on examination success rates by student ability (assessed at the end of primary school).

The school's reputation in the community is influenced by the publication of school league tables summarizing these detailed results. Exhibit 4 provides an example of the type of information that is published for every grant maintained school in England. Administrators seeking to strengthen their school's reputation are thus induced to give

Exhibit 1

Warwickshire

Exhibit 1 (cont.)



[redacted]

[redacted]

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Exhibit 2
Haverstock School
Camden Bourough London

[illegible]	GCSE Grades									
	A	B	C	D	E	F	G	U (fail)	ABS	TOTAL ENTRIES
[illegible]	8 (6.5)	18 (14.6)	26 (21.1)	18 (14.6)	15 (13.0)	12 (9.8)	8 (6.5)	0 (0.0)	17 (12.8)	123 (100.0)
[illegible]	13 (12.7)	2 (2.0)	25 (24.5)	16 (15.7)	8 (7.8)	13 (12.7)	7 (6.9)	12 (11.8)	6 (5.9)	102 (100.0)
Biology										
Chemistry										
Physics										
Science Double Award	36 (26.1)	8 (5.8)	20 (14.5)	24 (17.4)	18 (13.1)	6 (4.3)	6 (4.3)	10 (7.3)	10 (7.3)	138 (100.0)
Science Single Award	0 (0.0)	0 (0.0)	3 (6.7)	7 (15.6)	7 (15.6)	7 (15.6)	1 (2.2)	8 (17.8)	12 (26.7)	45 (100.0)
Other Subjects **										
ENGLISH LIT.	7 (6.4)	14 (12.8)	30 (27.3)	15 (13.6)	14 (12.8)	9 (8.2)	3 (2.7)	0 (0.0)	18 (16.4)	110 (100.0)
ART	13 (20.0)	8 (12.3)	13 (20.0)	7 (10.8)	6 (9.2)	6 (9.2)	5 (7.7)	3 (4.6)	4 (6.2)	65 (100.0)

* [illegible] that the examination was not attempted
** Please insert appropriate subjects

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Exhibit 3

[illegible] EXAMINATIONS

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] *	NOT ENTERED [illegible] *	ENTERED FOR 5 OR MORE	ACHIEVED 5 OR MORE GRADES A-C	ACHIEVED 5 OR MORE GRADES A-G	ENTERED FOR 1+	ACHIEVED 1 OR MORE GRADES A-C	ACHIEVED 1 OR MORE GRADES A-G	ACHIEVED NO GRADES A-G (INCL. ABSENT)	NO. OF PUPILS ON 2ND TERM ROLL (TS ORS OLD AS AT 31.8.90)	PERFORMANCE SCORE	
											TOTAL SCORE	NO. OF PUPILS
[illegible]	1 (3.0%)	0 (0.0%)	29 (90.6%)	22 (68.7%)	28 (87.5%)	31 (96.9%)	26 (81.3%)	29 (90.6%)	2 (6.3%)	32 (100.0%)	1334	29
[illegible]	3 (5.3%)	0 (0.0%)	50 (87.7%)	14 (24.6%)	41 (71.9%)	54 (94.7%)	32 (56.1%)	47 (82.5%)	7 (12.3%)	57 (100.0%)	1341	47
[illegible]	9 (21.0%)	3 (10.3%)	10 (34.5%)	1 (3.4%)	7 (24.1%)	17 (58.6%)	1 (3.4%)	16 (68.2%)	3 (10.3%)	29 (100.0%)	134	16
[illegible]	6 (19.4%)	3 (9.7%)	16 (51.6%)	4 (12.9%)	12 (38.8%)	22 (71.0%)	12 (38.8%)	19 (61.3%)	3 (9.7%)	31 (100.00%)	364	19
[illegible]	19 (17.8%)	6 (5.6%)	105 (98.3%)	41 (77.5%)	68 (59.1%)	124 (93.2%)	71 (67.7%)	109 (73.2%)	15 (10.1%)	149 (100.0%)	3230	109

The Banding System is used in conjunction with parental choice in the allocation of pupils to secondary schools. On the basis of primary school judgement and the performance in a general test of verbal reasoning, pupils are divided into three broad groupings. Band 1 represents those 25% who at age 10 appeared above average, Band 2, the 50% who appeared average and Band 3, the 25% who at that age appeared below average.

The Performance Score was developed to provide a cumulative measure of pupils' performance in all subjects taken in the GCSE examinations. Points are assigned for different grades ranging from 7 points for an A grade to 1 point for a grade G. Although the points for each grade were assigned on an arbitrary scale, there is evidence that altering the [illegible] makes very little difference. The main use of the scale is that it provides an opportunity to make comparisons between similar groups of pupils over different years.

* [illegible] students in all site units

Exhibit 4

SCHOOL EXAM LEAGUE TABLES

Putting results to the test

For Warwickshire

THE TABLES printed in this supplement have been compiled by the Department for Education. Schools were required by law to provide their GCSE and A-level exam results to the department, and check the figures before publication.

In the booklets it is publishing today, the Government has listed schools alphabetically within each local education authority. We have altered the government tables in only one significant way: we have ranked schools within each local education authority according to the proportion of pupils gaining five or more grades A to C at GCSE, because that is the most widely recognised measurement of high academic performance. It is at least as important, however, to look at the proportion of pupils gaining straight passes.

Schools which perform well at GCSE may perform differently at A-level, so the A-level columns need to be read separately. The tables exclude vocational qualifications such as Btec.

A-level and AS-level performance is measured by a points system – the same one used for university entrance. Thus, an A-level grade A scores 10, B-8, C-6, D-4, E-2. AS-levels score half the number of points for the equivalent grade. Pupils at a school which has an average 14 point score are therefore registering, say, an average of a C and two Ds or an A and a D at A-level.

The following codes identify school type:

Main Local Authority Funded
Vol A Voluntary Aided
Agree Special Agreement
Vol C Voluntary Controlled
Spec Special (Maintained)
Spec Non Special (Non-Maintained)
GM Grant Maintained (Opted Out)
CTC City Technology College
Spec1 Independent Special Needs
Ind Independent (Non-Special)

These codes identify admissions policy:
COMP Comprehensive
SEL Selective
MOD Modified (Modern)
N/A Not Applicable
MSF Mainly Mixed Sex Form

School							
Bournville School							
Meadway School							
St Francis Xavier Sixth Form College							
Shenstone School							
Fairfields School							
Woodrush School							
Cleveland School							
WARWICKSHIRE							
The Kings High School for Girls							
Rugby High School for Girls							
King Edward VI Grammar School							
Alcester Grammar School							
Stratford upon Avon Grammar School for Girls							
Lawrence Sheriff School							
Rugby School							
Higham Lane School							
Kenilworth School							
St Thomas More RC School							
Rivers CE School							
Arrowfield School							
Ashlawn School							
Alcester School							
Finwood School							
Coleshill School							

School							
Alcester High School							
George Eliot School							
Nuneaton School							
Queen Elizabeth Lower and Upper School							
Studley High School							
Bishops Clarendon School							
Stratford upon Avon High School							
Attleborough School							
North Leamington School							
Southam School							
Exhall Grange School							
St Benedicts RC High School							
Campion School							
Alcester High School							
Myton CE (A) High School							
Kingsbury School							
Bishop Wulfstan RC High School							
Etone School							
Alcester High School							
Water Orton School							
River Valley Community School							
Ash Green School							
Avon Valley School							
Avon House School							
King Edward VI College							
Myton School							

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teaching effectiveness (as assessed by the external exam) first priority.

3.4 Competition among Upper Secondary Schools

French, Dutch, English and Scottish upper secondary schools face a competitive environment that is similar in many ways to the one faced by American colleges and universities. Funding is on a per student basis, so schools experiencing an increase in applications have an incentive to expand up to the maximum their physical plant can accommodate. Schools with strong reputations get many more applications than they can accept and are, in effect, rewarded by being allowed to select what they consider to be the "best" from their pool of applicants.

Access to the top upper secondary schools depends primarily on a student's achievement in lower secondary schools, not on her parent's ability to buy a house in a suburb with an excellent high school as in the U.S. This means that parents who want their child to attend the best upper secondary schools must make sure their child studies hard in lower secondary school.

In France, England and Scotland the great majority of upper secondary schools, however, admit students on a first come first serve basis (sometimes giving priority to students living near the school), so a poor academic record in previous grades does not prevent students from entering upper secondary school or having a choice of school.

The Netherlands has three types of general secondary school--the VWO, the HAVO and the MAVO--and a system of lower vocational schools, LBO/LEAOs abd KVBOs, which prepare students for occupationally specific exams as well as general education exams. The first year curriculum is supposed to be the same in all schools so that students can transfer between schools at its conclusion. In succeeding years, however, curricula and rigor diverge. Rigor an' work loads are greatest at the 6 year VWO's, somewhat less demanding at the 5 year HAVOs and still less demanding in the 4 year MAVOs. Which and how many foreign languages are studied also differ across school types. The LBOs devote considerable time to occupationally specific curricula, so less time is available for general studies. Advise to parents about which type of school is appropriate for their child is based on the pupil's record in primary school. Parents have the right, however, to select the type of school and

which school of that type their child will enter. There are three parallel systems of education--a locally administered public system, a Catholic system and a Protestant system--so parents have many schools to choose from.

Essential to a competitive environment, of course, is the right of families to send their child to the upper secondary school of their choice if the child qualifies academically. Political boundaries do not constrain choice of upper secondary school. Barriers to attending a school other than the closest one are low in these countries because schools are smaller and consequently more numerous, population densities are higher, public transportation is often available, opportunities to participate in sports and music are often organized by the community not the school, and centralized funding of schools means that spending per pupil varies little and **money follows the student even when a school in a nearby community is selected.** In 1984, two years after choice became operational in Scotland, 9 percent of pupils entering secondary school nationally (11 to 14 percent in urban areas) attended a school outside their catchement area (Adler and Raab 1988). Scottish parents who make this choice appear to be behaving rationally for they tend to choose schools which are more effective than the school in their own catchement area. An analysis of school choice in the Fife Education Authority found that the schools chosen by those leaving their catchement area had better examination results at age 16 than would have been predicted given the pupil's initial test scores and social background characteristics and the average SES of pupils at the school.[17] Consequently, the free choice of schools that prevails in our four European nations generates a competitive pressure on schools to excel that doesn't have any counterpart in the U.S. outside the cities with magnet schools.

3.5 Standards of the External Exam

External examinations at the end of secondary school are probably necessary if high achievement levels are to be attained, but they are not sufficient. Examinations that are not challenging, that are taken by only a small minority of the age group, or that do not generate substantial rewards for successful examinees will have little effect on average achievement levels.

British youth have significantly lower achievement levels than French and Dutch youth. The gap is not as large as for American youth, but it is substantial, particularly at

age 13 and 14 when the entire age group is in school. One possible explanation for this is that the passing standard of the GCSE is lower than for the Bac and the Dutch exams, and the more difficult A levels are taken by only a small minority (17 percent of school leavers in 1981 and 23 percent of school leavers in 1991, Government Statistical Service 1993, p. 8).

Further evidence that the passing standard of the external exam is important comes from examining the American states that have instituted minimum competency exams for high school graduation. While these exams have apparently reduced the numbers of students with very low basic skills levels (Lerner 1991), the achievement levels required to pass were set quite low (about an eighth grade level of competence), and they have clearly not brought American achievement levels up to European standards.

New York State's Regents Exams are more difficult and they are probably a major reason why, when the family income, parental education, race and gender of SAT test takers were controlled, New York State had the highest adjusted mean SAT test score of the sample of 38 states with reasonably large numbers of test takers (Graham and Husted, 1993). The Regents exams are, however, considerably easier than the Bac and the rewards for doing well on them are quite modest. Indeed, Regents exam results determine only whether you get a particular type of high school diploma. Schools and teachers are not required to incorporate Regents exam grades into the student's course grades. In many schools the Regents Exam grade accounts for only one-quarter of the student's final grade in the course. A passing score is not necessary for admission to community colleges in the state and employers ignore exams results when they make hiring decisions. Regents scholarships have been awarded on the basis of aptitude test scores, the SAT, not Regents exam results. The low passing standard and the weak rewards for doing well on Regents exams help to explain why New York students do not achieve at French or Dutch levels.

High passing standards on external exams are clearly associated with high achievement levels. Does this reflect a cause and effect relationship? Yes, but causation runs in both directions. High passing standards on a high stakes exam are politically sustainable only when most students taking the exam are able to meet the standard. Howson's examination of the mathematics curricula of thirteen nations led him to conclude that "anyone studying the curricula reprinted in this book will note just how low are English expectations for the below average pupil in certain areas, particularly arithmetic, which other

nations regard as basic. (1991, p. 37)" The median pupil in Britain, for example, is not expected to learn the times tables up to 10 X 10 until age 11. If the GCSE mathematics exams were made more demanding without strengthening mathematics teaching, failure rates might rise to politically unacceptable levels.

Does the passing standard also influence student effort? When I asked my Cornell students to reflect on this question, the following response was typical: "*As I look back on my high school education, I now realize that I learned (and retained) the most from the teachers who were the toughest and most demanding.* (Kurt 1989, p. 6)" Quantitative research confirms such reflections. In High School and Beyond data, those taking more rigorous courses learn a good deal more between sophomore and senior year, even though their grade point average suffers as a result (Bishop 1985, Gamoran and Barends 1987).

There have been over a hundred experimental studies of the effect of goal difficulty on various kinds of achievement and "meta analyses have demonstrated that difficult goals lead to higher performance than easy goals" (Wright, George, Farnsworth & McMahan 1993 p. 374). Mento, Steel & Karren's review of the literature concluded that "If there is ever to be a viable candidate from the organizational sciences for elevation to the lofty status of scientific law of nature, then the relationship between goal difficulty, difficulty/specificity and task performance are most worthy of serious consideration (1987, p. 74)." The effects are quite large: on highly complex tasks like school and college course work, specific hard goals raised achievement by 47 percent of a standard deviation (Wood, Mento and Locke 1987).

In the laboratory and field settings used by psychologists conducting this research, the subjects have generally accepted the goal set for them by the researcher. Achievement goes up, but the probability of failing to reach the goal rises as well. In most studies more than two-thirds of those in the "hard goal" condition failed to achieve their goal (Locke 1968 p. 163-165). Most of the studies examine behavior over relatively short periods of time. One would imagine, however, that if such experiments lasted a couple of years, those who consistently failed to achieve their goal would be likely to either lower their goals or give up on the enterprise altogether (ie. drop out physically or psychologically).

Stedry (1960) found that when subjects who had already set their own goals were assigned even higher goals by the study director, they rejected the assigned goal and

achievement did not rise. This appears to be what happens in American secondary schools. Most students reject the goals teachers set because the rewards for success are small. Others reject them because they appear unattainable.

How do European education systems induce students in upper secondary schools to set difficult learning goals and work towards them? They do not, as some have proposed for the U.S., set a single high yea-nay standard that everyone is expected to meet. Young people are much too different from each other for such a policy to work. Students have specialized interests and talents and need to be able to emphasize subjects which allow them to develop their special talents. Ability, motivation, interest in the subject and background knowledge vary greatly, so performance varies greatly. On the criterion referenced NAEP mathematics scale, 15 percent of American 13 year olds have better mathematics skills than the average 17 year old student, and 7 percent of 13 year olds score below the average 9 year old (NAEP 1988b). On the criterion referenced NAEP reading scale, 16.5 percent of 13 year olds have better reading skills than the average 17 year old student, and 9 percent of 13 year olds score below the average 9 year old (NAEP 1986). The variance of achievement at age 13 is roughly comparable abroad (IAEP 1992). Even if the variance of achievement were cut in half, 15 percent of 13 year olds would still perform better than the average 16 year old and 7 percent would perform below the average 10 year old.

If a single passing standard applies to everyone, many students will pass the standard without exertion and will, therefore, not be stimulated to improve by the need to pass the exam.[18] Many other students will calculate that they are now so far behind and the effort required to achieve the standard is so great, the costs of the effort are larger than the possible reward. They will reject the goal of meeting the standard. When the variance of performance is large, only a small portion of students will find the reward attached to a single absolute passing standard an incentive to study (Kang 1985). Increasing the reward for passing the single standard does not solve the problem because this inevitably leads to political pressure to lower the achievement level necessary to pass. Shifting responsibility for setting the passing standard from the teacher to a statewide Department of Education does not make the decision any less controversial.

Thus, a single yea-nay passing standard which everyone is expected to achieve is not an attractive policy and no country has adopted it.[19] External exams need to signal the

level of a student's achievement, not just whether the exam was passed. Dutch external exams are graded on a 1 to 10 scale. Excellence on the *Baccalaureat* exams results in the award of a *Tres Bien*, a *Bien* or an *Assez Bien*. Once information on performance levels becomes available, employers and institutions of higher education will tend to base their selection decisions on it. Graduates with the strongest exam results have options not available to those with weak results, and the outcome is a system of graduated rewards. In When the variance of achievement is high, incentives for effort are stronger on average under a graduated rewards system than under a single large reward attached to achieving a fixed standard (Kang 1985).

Ninety percent of English and 97 percent of Scottish secondary students attend public comprehensive secondary schools which deliver a common National Curriculum to all students. The English GCSE and Scottish "Lowers" Examinations taken by 90 percent of 16 year olds conform to Kang's model. There are substantial and graduated rewards for doing well on these exams. Indeed the rewards for doing particularly well on these external exams, while smaller than those in France, appear larger than those in the Netherlands.[21] **Why then are English and Scottish 13 year olds assigned less homework than their American and Dutch counterparts?** (see Table 6 and Robitaille and Garden 1989, Postlethwaite and Wiley 1992, IAEP 1992) **Why is their achievement in mathematics and science at age 13 significantly lower than in the Netherlands?** As the time for the exam approaches in Britain, teacher demands and student effort increase substantially. At age 13, however, standards are low. **Why do the backwash effects of the exams at the end of secondary school extend further back in the pupil's schooling in the Netherlands and France than in Britain?**

3.6 *Redoublement* as Mastery Learning and an Incentive to Study

British standards are low for 10 through 13 year olds because there are few immediate consequences for doing well or poorly at this age. The external exams are three to six years away. Students are promoted to the next grade regardless of how well they do in the previous grade. Those who fall behind inevitably slow the pace of the class in succeeding years.

Selective secondary schools account for only 10 percent of pupils in England and 3

percent in Scotland, so only a small minority of 10 to 12 year olds are under parental pressure to study harder in order to gain admission to a selective secondary school. Teachers at public primary schools perceive themselves to be preparing children for entry into the local comprehensive secondary school; not for entry into selective tuition charging grammar schools.

Primary school teachers quite reasonably do not feel accountable for how well students do on exams taken after four years of attendance at a secondary school. Secondary schools tend to be large and the teachers who handle the first year students also lack a sense of accountability for performance on exams that are more than three years in the future. The government has attempted to enhance accountability in England by introducing compulsory external examinations assessing mastery of the national curriculum at the end of primary education and two years into secondary school and publishing the results school by school. These exams are intended to inform parents about their child's progress and to help them assess the effectiveness of local schools. The exams are not to be used for selection. Teachers objected to these exams, however, and successfully boycotted their administration during the 1992-93 school year. In Scotland, student progress on national curriculum goals for 11 and 14 year olds are informally assessed by the student's teacher, not by an external exam.

The situation is very different in France and the Netherlands. Pupils who fail more than one of their required secondary school courses are generally required to *redoubler*. The American translation of *redoubler* is "to be held back" or "to repeat the grade."[21] The French word *redoubler* has a more active connotation, similar to the English word, "to redouble." In France, decisions about *redoublement* (repeating a grade) are made by the *Conseil de Classe*, made up of the teachers for that class and two parent representatives. The teachers' "basic motivation is to help the child himself, to ensure that the pupil is sufficiently well prepared so that he may fully benefit from work at a more demanding level."[22] To them *redoublement* is a form of Mastery Learning, a way of allowing some students extra time to achieve very demanding learning goals.

By British and American standards, *redoublement* rates are extremely high in France and the Netherlands. In 1990 Dutch *redoublement* rates were 7.5 percent per year in academic lower secondary schools, 5.1 percent per year in LBOs, the vocational lower

secondary schools, and 13.3 percent per year in academic upper secondary schools. French rates of redoublement ranged from 6.8 and 11.0 percent per year during the four years of general lower secondary education, ranged from 12.1 to 18.4 percent per year in the three year academic upper secondary schools and averaged 6.4 percent per year in the first two years of vocational upper secondary schools (see Appendix A).[37]

Redoublement is not something that is inflicted only on children from lower class backgrounds. Often high aspirations can be achieved only by *redoublement*. The two Dutch professors with grown children with whom I have discussed this matter both had a child who was required to *redoubler*. In France selective upper secondary schools serving upper middle class communities have grade repeating rates that are nearly as high as schools serving lower income communities. For example, *Lycee Charlemagne*, an upper secondary school serving one of the richest neighborhoods in Paris, asked 14 percent of its entering class to repeat the year in 1992. As a result, over half of French students in the final year of an academic track high school have repeated at least one year of school. Since those who redouble tend to shift to vocational lines of study, even higher proportions of the students in vocational programs are over the theoretical age. In the second year of BEP and CAP programs (the 11th year of schooling if there has been no *redoublement*), 93% of students are over the theoretical age and 58% are more than one year over age.[38] This phenomenon is one of the reasons why France and The Netherlands have school enrollment rates for 17 and 18 year olds which are comparable to U.S. levels even though rates of entry into post-secondary education are lower.

For secondary school students, the threat of having to *redoubler* is a strong incentive to study. When I asked how the students who must redouble feel about it, I was told that they feel "**dishonored.**" Since *redoublement* is a public event, parents also feel stigmatized, so they have an incentive to see that their child studies hard.

In The Netherlands, students who are having difficulty keeping up with the demanding pace of a VWO or HAVO curricula often have a choice: either repeat the year or transfer to a less demanding type of school. At the VWO I visited in The Netherlands, one third of the entering class transfers to a HAVO or a less demanding VWO before the beginning of the third year. VWOs offer a fast paced 6 year university preparation program. Parents who want their child to enter a VWO are generally accommodated even when

primary school teachers advise against it. The child's performance in school determines whether the parents' aspirations are realized or whether a transfer to a less demanding type of school is necessary.

Being forced to transfer to a HAVO or a MAVO does not foreclose university attendance. With good grades at the end of the 5 year HAVO program the student can transfer to a VWO, complete the final two years and then enter university. In addition, numerous vocationally oriented higher education options are open to HAVO and MAVO graduates and transfers to university are feasible with good grades. It is even possible to make it into university after starting out in an LBO, the lower vocational school. There is a Dutch student in Cornell University's animal science PhD program who did just that. These alternative routes to university are open; they just take longer.

While other routes to university are possible, pupils who choose the fast track in 7th grade, a VWO, do not want to be forced "to get off the train." Students in The Netherlands and France are formed into classes which take most subjects together and which remain intact for two years and sometimes longer. This class is one's peer group, the group with whom you spend most of your time. When I asked a Dutch student who, despite long hours of study, had been required to repeat a grade, why she had studied so hard, she responded *"I wanted to stay with my class!"* Students do not want to have to repeat the grade because it threatens to sever the friendships they have made in the class. Apparently, trying to keep up academically (ie. accepting the academic goals of the school) is viewed positively by peers because it is an expression of commitment to the group. Those who refuse to study are apparently seen as rejecting the group. In these two countries peer pressure seems to encourage lagging students to study, not discourage them as in the U.S.

3.7 Choice of Specialization as Goal Setting

All education systems give upper secondary students (and their parents) the right to select a specialty and the right to choose the rigor and dificulty level of either the school, the academic program or specific courses.

In France there are two types of upper secondary school: *Lycee general and technologique* (which offer a variety of three year programs in academic and technological specialties leading to a Bac exam) and the *Lycee d'Enseignement Professionnel* (vocational

schools which offer two year programs preparing students for the *Brevet d'Enseignement Professionnel* (BEP) and the *Certificat d'Aptitude Professionelle* (CAP) and two year follow on programs leading to the *Baccalaureat Professionnel*. Each type of school offers a variety of specializations each of which leads to a different package of Bac exams. In the *Lycee generale*, specialization now occurs in the second year. Most *lycees* offer four or more different lines of study. Students take almost all their subjects with other members of a class (mean size 31 pupils) that is formed once specialization commences. The class stays together for the final two years of *lycee*.

Four lines--literature and languages (A), economics and social science (B), mathematics and physical sciences (C), and biology (D)--have roughly equal numbers of students and together account for most of the *Baccalaureat Generales* awarded. The Mathematics-Physics-Chemistry line (C) is the most difficult, carries the greatest prestige and keeps open the option of going to a preparatory school for one of the *Grandes Ecoles* (elite post-secondary colleges comparable in prestige to Harvard). Admission to the C line within a *lycee* is generally highly competitive. Many Lycees also offer programs in a variety of business and vocational subjects which lead to the Technical Bac (BTn). The Netherlands has a similar though less elaborated system of specialization within general upper secondary education. As in France the math-science line has the reputation of being the most difficult.

Lines are more than a response to different interests and types of talent among students. They are also one of the ways European school systems deal with the fact that some 15 year olds are willing and able to tackle more difficult material than others, while simultaneously trying to minimize the invidious distinctions between those who choose more or less difficult programs of study.[25] The lines have a tracking effect, but since they are based on the student's choice of field (rather than a smart/dumb or high/low distinction), equal formal respect and status is given to accomplishments in the different lines. The fact that classes are formed around subjects of study rather than student ability also helps maintain the morale of the teachers of the less able students. Teachers of social studies (or a vocational subject) may complain about their inability to attract the best students into their major, but their belief in and love of their subject induces them set high standards and to do the best they can with the students who specialize in their field.

In France and the Netherlands, picking one's school and specialization effectively sets a specific learning goal. The large numbers of students who are forced to repeat grades or switch to easier schools and programs implies that most students and parents are setting very difficult goals. The goal setting literature tells us that working towards a specific and difficult goal generates much stronger motivation than being told to "do your best" or setting easy goals. Thus the continental European pattern of setting highly ambitious goals, maximizes average achievement levels even while it increases the number of students who fail to achieve the goal they set. **Why do French and Dutch parents select secondary schools and programs that are so challenging that many must repeat grades to keep up or transfer into easier programs and schools?** There are three reasons. First, the goal selected is visible to parents, relatives and neighbors and going for difficult goals confers prestige just as volunteering for the Marines or the Rangers confers prestige. Second, achieving difficult learning goals is rewarded by admission to preferred universities and fields of study and access to better jobs. Finally, the choice is generally made by the parent, not the child. Parents are better informed about the long term benefits of achieving difficult goals and their own prestige rises when their child attends a selective school or pursues a difficult line of study. Parents may view the extra studying necessary in a rigorous specialty as a plus rather than a negative as the child is likely to.

In America, by contrast, selecting difficult goals generates much weaker rewards. Everyone in the neighborhood attends the same school. Students select individual courses, not programs or schools. Subjects are taught at vastly different levels, but the rigor of these courses is not well signalled to parents, relatives, neighbors, employers and colleges. Admissions staff at selective colleges learn how to read the transcripts of high schools they recruit heavily from and they evaluate grades in that light.[26] However, most colleges have, historically, not factored the rigor of high school courses into their admissions decisions.[27] Almost no employers do so. The students who do not aspire to attend a selective college, consequently, quite rationally avoid rigorous courses and demanding teachers.

Most parents are uninformed about course options and their consequences and fail to influence the choices made. In the university town of Ithaca, New York, for example, less than one-fifth of parents attend the meeting in 8th grade at which the student and guidance counselor plan the student's 9th through 12th grade course sequence. Many students

manipulate the information their parents receive, so as to minimize the academic demands that are placed on them. This is illustrated by the following story:

> *In my case I stalled many attempts of my parents to get involved in my education. I wanted to be left alone in high school, and the high school was more than willing to accommodate my wish. Any parental influence could have damaged the treaty, and , therefore, I was cognizant that I needed to keep my parents out of my high school relationship. My parent's lack of information about the high school was my biggest ally in accomplishing my objective. They knew that I took math, science, and English, but in a modern high school those titles are meaningless as you could sleep through most classes and still receive above average grades. The other factor in my advantage was that my parents did not know the level of my scholastic ability. It was difficult, if not impossible for them to know if my average to above average grades were good or bad since grades are a very relative measure of performance. For some students an average grade is great, while for others it is poor.*
>
> *My high school offered a variety of classes to deal with the diversity of its population. If asked, its administrators and faculty would claim that it has devised the perfect curriculum to meet the vast demands of the community. If that is true, how do you explain my situation. At fourteen years of age my high school gave me the freedom to choose my destiny. At that time I chose to mentally opt out of school. My decision not only went unchallenged, it was furthered with the help of the system and teachers that allowed free choice at the expense of my education. The system created social norms that encouraged my apathy and under achievement. I was so entrenched in the culture of the unspecial that I made conscious efforts to keep my parents from interfering with my decisions. It was not hard to do as the system was set up to give the illusion that everyone was receiving an equal and credible education (Jeff 1991, 7-8).*

Some students, the small minority who want to attend highly selective colleges, sign up for demanding courses. Most students choose courses that have the reputation of being fun and not requiring much work to get a good grade. Teachers know this and adjust their style of teaching, their homework assignments and their grading standards with an eye to maintaining enrollment levels.

Guidance counselors are not encouraged to push extra students into the more demanding classes. Parents who want their child in the more demanding course are accommodated, but, behind their back, they are referred to as "pushy" or "elitest." For the great majority of students with non-pushy parents, most counselors see their role as insuring that the pupil does not get in over his head. No one should risk failure. In Ithaca, for example, those wanting to take Regents Earth Science in 8th rather than in 9th grade (so

as to make room for additional science courses in high school) are not supposed to be allowed into the course unless a B+ is pretty much assured.

In many cases the parents of children assigned to less demanding courses are not informed that there is a more demanding course that their child might have taken. In Ithaca, for example, 6th graders learn which of four types of mathematics classes they have been assigned to on the first day of middle school. If parents were to look at the schedule their child brings home they might see the word "enriched" and conclude that their child is taking the most demanding course. In fact, their child is in a class that moves at a slower pace than the "accelerated" class. If calculus is to be taken in senior year, a switch into the accelerated stream is essential, but it becomes increasingly difficult as time passes. Only a few parents are aware of the long term consequences of the 6th grade math class assignment and the middle school makes no effort to inform parents of these consequences early enough to arrange a transfer into "accelerated" before the accelerated students have covered a good deal of ground not covered in the "enriched" class.

IV. Summary and Policy Implications

At the beginning of the 1980s French and Dutch 13 and 14 year olds were about 1.5 to 2 grade level equivalents ahead of American students in mathematics and science. British students had higher achievement than American students but lower achievement than French and Dutch students. These differentials were not caused by low school attendance rates in Europe or higher spending in Europe. They were not caused by allocating more time to the study of these subjects. Indeed heavy European investments in foreign language instruction result in their lower secondary students receiving less instruction in math and science than American students. The high achievement in France and The Netherlands comes from better teaching, greater time on task and greater student engagement in learning. Secondary school teaching is a much better paid and prestigious occupation in France and The Netherlands than in the United States and, so consequently, better prepared university graduates are recruited into the profession.

Why are European students more engaged in learning? Why are European teachers better paid and more respected? In The Netherlands and France, learning in secondary

school is assessed by difficult subject specific external examinations and doing well on these exams generates very large rewards for the student. The reputations of teachers and schools are also affected by student achievement on these exams. Parents base their selection of the upper secondary school their child will attend and which academic or vocational program she will pursue, in part, on these reputations. Parents tend to set difficult goals for their children, so most students are placed in programs of study which for them are very demanding. Students are formed into classes which take all their subjects together, remain intact for two years or more and become the student's peer group and reference group. Students who are not progressing at the rate necessary to succeed on the external exam are asked either to switch to an easier curriculum or to repeat the year. Students do not want to be forced to sever the friendships they have developed in the class, so they are strongly motivated to keep up with their studies.

In the United States, students are being ranked relative to their classmates, not assessed against an external criterion, so they pressure each other not to study. Teachers are expected to pass almost all students, and if the class fails to study hard, the teacher is forced to lower the passing standard of the course. Subjects are taught at vastly different levels, but the rigor of the course and the learning achievements that result are not well signalled to parents, neighbors, colleges and employers, so rewards for setting difficult goals are small. In addition, the choice of which course to take is generally not made by the parent, but by the 13 to 16 year old child and her guidance counselor (someone who is motivated more by the desire to minimize the risk of failure than the desire to stretch and challenge the child).

Clearly, everyone--students, parents, teachers, and administrators--faces much stronger incentives to strive for academic excellence in France and the Netherlands than in the United States. Significantly greater achievement in mathematics, science and foreign languages is the result. Incentives for excellence in Britain lie somewhere between the French and the American pole, and so does performance.

The French and the Dutch models of secondary education combine in one system many of the most drastic reforms that have been proposed for the United States:

- **externally set subject specific achievement exams which are taken by almost all high school graduates,**

- **every school a magnet school--parental choice of upper secondary school and special field of study with money following students,**
- **mastery learning with teeth (those who fail two subjects in secondary school are required to either repeat the grade or transfer to a less demanding school or program),**
- **30 percent higher teacher salaries and high standards subject competency exams regulating entry into secondary school teaching,**
- **High standards for admission to post secondary education.**

This system of incentives and school organization works for France and the Netherlands. In the United States, however, such reforms would be extremely controversial. Successful implemetation of any one of these reforms would be a major political undertaking? Implemementation of the whole package of reforms is probably politically infeasible. Yet the analysis suggested that when, in Britain, just two elements of the package--mastery learning with teeth and high relative salaries--were missing, achievement levels were substantially lower than in the Netherlands and France. Consequently, from a practical policy point of view the message is not very positive. France and the Netherlands have not discovered a cheap and painless route to higher achievement.

The important lesson is that incentives--both their strength and structure--matter. There are less controversial ways of increasing the rewards for academic achievement, so the analysis should not cause American reformers to despair. Reforms tailored to the American context have a greater chance of successful implementation than an effort to replicate the French or Dutch systems of secondary education. A number of incentive based approaches to reforming upper secondary education are discussed in Incentives to Study and the Organization of Secondary Instruction which is available by writing to the Center for Advanced Human Resource Studies, Ives Hall at Cornell University.

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Table 1

Achievement in Lower Secondary School

	1982 IEA Math Age 13-14 % Correct	1991 IEA Reading Age Adjusted Age 14 %	Age 14 Mean (SD)	1983 IEA Science Age 14-15 (not adj for age) Mean (SD)	Gain Grd 5 to Grd 9	1991 IAEP Mathematics Level Age 13 % Correct Mean (SD)	Gain Age 9 to Age13	1991 IAEP Science Level Age 13 % Correct Mean (SD)	Gain Age 9 to Age 13
France	53.9	505	533 (60)	--- ---	---	68.2 (20.1)	---	68.6 (17.1)	---
Netherlands	57.1	494	523 (76)	65.9 (16.9)	---	--- ---	---	--- ---	---
England	47.1	---	--- ---	55.8 (16.4)	1.58	60.6 (21.4)	29.0	68.7 (17.5)	19.7
Scotland	48.4	---	--- ---	--- ---	---	60.6 (20.3)	26.5	67.9 (16.5)	20.0
United States	46.4	543	509 (81)	54.8 (16.7)	1.13	55.3 (20.9)	25.4	67.8 (16.4)	17.2

Column 1 is a weighted mean percent correct for students in the grade where the majority have attained 13 0a to 13 11 years by the middle of the school year from the Second International Mathematics Study (McKnight et al 1987, p. 126). The French, English, and American students all had the same mean age, 14.1. Mean age was 14.0 for Scotland and 14.4 for Netherlands. Adjusting for the greater age of the Dutch students would have lowered their percent correct by about 2 points. Column 2 and 3 are the age adjusted means and standard deviations of the overall reading score in the 1991 IEA study. Column 4 & 5 is the percent correct and standard deviation for 5th graders (Postlethwaite and Wiley, 1992, p. 55 & 74). The lack of adjustment for age differences has little effect on comparisons between Netherlands and the U.S. because the mean age in the Netherlands was only 3 months greater than in the U.S. The English students are a whole year and one month younger than the American students. If students of equal age had been tested English achievement levels would probably have been about half way between Dutch and American levels. Column 6 is the differential in standard score units between 5th graders and 9th graders on the test given in the Second International Science Study sponsored by the International Association for the Evaluation of Educational Achievement. Columns 7, 8, 10 and 11 are the mean percent correct and standard deviation from the 1991 IAEP study of mathematics and science achievement of 13 year olds (IAEP, 1992a 1992b). Columns 9 & 12 are the increase in the percent correct on items common to the tests given to 9 and 13 year olds.

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Table 2
Achievement at the End of Upper Secondary School

	1982 IEA Mathematics			1983 IEA Science: Final Year of Upper Secondary School									
	Final Yr. of Sec. Sch.			Physics			Chemistry			Biology			Total
	Percent Correct	% Age Group	% Time Math	Percent Correct	% Age Group	Hrs/ Week	Percent Correct	% Age Group	Hrs/ Week	Percent Correct	% Age Group	Hrs/ Week	Science Time
France	---	--	--	---	--	---	---	--	---	---	--	---	---
Netherlands	---	--	--	---	--	---	---	--	---	---	--	---	---
Belgium	50.0	10	20	---	--	---	---	--	---	---	--	---	---
Finland	60.5	15	14	37.9	14	2.0	35.9	16	1.0	50.2	41	2.0	3.1
Norway	---	--	--	54.1	19	5.0	44.3	6	5.0	55.6	4	5.0	---
England	50.0	6	21	62.4	6	5.1	68.3	5	5.2	62.4	4	5.2	7.2
Scotland	42.0	18	17	---	---	---	---	--	---	---	--	---	---
United States	39.0	17	14	45.3	1	5.0	37.7	2	5.0	38.1	12	5.0	7.0

Column 1 is a weighted mean percent correct for students in the final year of secondary school from the Second International Mathematics Study (McKnight et al 1987, p. 124). The mean age was 17.8 for the US, 18.1 for England, 18.9 for Scotland, 18.6 for Finland and 18.3 for Belgium. Column 2 is the share of the age cohort in advanced mathematics courses included in the study. Column 3 is the share of school time spent in mathematics classes. Columns 4, 7 & 10 give the percent correct for students studying each science subject in the final year of secondary school. Column 5, 8 and 11 are the proportions of the age cohort taking each science subject in the final year of secondary school [for the U.S. it is the share of students taking their second year of the subject]. Columns 6, 9 and 12 are the number of hours per week spent in classes in each science subject. [Postlethwaite and Wiley, 1992, p. 6, 36, 37 & 69]. The mean age was 17.5-17.10 for the U.S., 18.0 for England, 18.7 for Finland, and 18.11 for Norway.

Table 3
SECONDARY SCHOOL ENROLLMENT AND COMPLETION RATES

	France	Nether-lands	United Kingdom	United States
FT Upper Sec. Students/Theoretical Age Group[1]	84.9%	91.1%	76.9%	90.2%
Enrollment Rate at age 17[2]	79.3%	79.2%	52.1%	89.0%
Enrollment Rate at age 18[2]	63.1%	59.7%	33.2%	60.4%
Secondary Diplomas Awarded/Population of Theoretical Completion Age[3]	84.5%	56.9%	65.1%	80.6%

[1] OECD. Education at a Glance. 1992. p. 77.
[2] OECD. Education in OECD Countries, 1987-88. 1990. table 4.2.
[3] OECD. Education at a Glance. 1992. p. 97.

Table 4
EXPENDITURE PER PUPIL

	France	Nether-lands	United Kingdom	United States
Public Expenditure per Secondary School Student[1]				
Relative to GDP per worker	9.0%	7.2%	9.0%	10.5%
Relative to GDP per capita	22.5%	17.7%	20.4%	22.4%
Secondary School Students/Teachers[2]	13.4	20.0	16.5	15.8
Share of NonTeaching Staff[3]	26 %	16 %	...	51 %

[1] OECD, Education at a Glance, 1992, p. 77.
[2] The ratio of the number of full-time-equivalent pupils enrolled in secondary schools to the number of full-time-equivalent secondary school teachers taken from OECD (1992, Table P16).
[3] Share of all staff employed in publicly funded schools and ministries of education that are instructional staff from Table P9.c of OECD (1992). The non-teaching staff includes administrators at all levels, custodial staff, bus drivers, clerical workers, nurses and counselors. Staff providing continuing vocational training, apprenticeship training, art and music schools not under departments of education were excluded from both the numerator and denominator of the ratio.

Table 5

TEACHER COMPENSATION AND CONDITIONS OF WORK

	France	Nether-lands	Eng-land	Scot-land	United States
Teacher Compensation/Compensation of All Employees[1]					
Lower Sec. Teacher--Starting	.95	1.32	.87	.91	.86
Mid Career (15 yrs)	1.44	1.58	1.63	1.61	1.33
Upper Sec. Teacher--Starting	1.06	1.39	.87	.91	.86
Mid Career (15 yrs)	1.61	2.32	1.63	1.61	1.33
Class Size[2]					
Lower Secondary	24	28	16	20	26.8
Upper Secondary	29	24	16	15	25.6
Teacher Class Contact Hours/Week[3]					
Primary School	27	27	27	25.5	30.5
Lower Secondary School	20.2	24.2	22	23.3	20.8
Upper Secondary School	15.1	24.2	22	23.3	22.9
Teacher Days per year[4]	176	190	195	195	185

[1] Compensation of secondary teachers was calculated by multiplying their salary by the ratio of compensation to wages for manufacturing workers. This estimate of teacher compensation was then divided by average compensation of all workers. The figure for French upper secondary teachers is a weighted average of salaries for Agregé (20%) and others (80%). (Nelson and O'Brien, 1993, pp. 73, 74, 90 & 91).

[2] Mean number of students in each class. (Nelson and O'Brien, 1993, Table II.2.)

[3] Mean number hours teaching a class per week. (Nelson and O'Brien, 1993, Table II.3.)

[4] Mean number of workdays for teachers. (Nelson and O'Brien, 1993, Table II.4.)

Table 6

STUDENT TIME--INSTRUCTION AND HOMEWORK

	France	Nether-lands	Eng-land	Scot-land	United States
Total Hours of Instruction/Year					
Primary Sch.-1971 (FISS)	918	1040	900	1040	900
9th Grade in 1982 (SISS)	---	---	984	---	1070
4th Grade in 1991 (IEA Read)	840	975	---	---	954
Secondary Sch-1971 (FISS)	775	1120	900	1080	900
9th Grade in 1982 (SISS)	---	1007	1025	---	1141
8th Grade in 1982 (SIMS)	1187	1000	896	1067	1008
9th Grade in 1991 (IEA Read)	1030	1092	---	---	792
Age 13 in 1991 (IAEP)	1073	---	960	1031	1003
Hours of Homework in All Subjects					
Hrs/wk--8th Grade in 1982 (SIMS)	0	5	5	3	5
Hrs/wk--Time Diary in 1980 (ISR)	-	-	-	-	3.5
Hmwk GT 2 hrs/day-Age 13 (1991 IAEP)	55%	--	30%	15%	30%
Hrs/Wk on Language Arts-4th Grade--IEA	9hrs	7hrs	--	--	11hrs
Time Devoted to Mathematics					
Math Share in 8th Grade (1982 SIMS)	12%	10%	13%	14%	14%
Hrs/wk Math Instr-Age 13 (1991 IAEP)	3.83	--	3.17	3.50	3.80
Hrs/wk Math Hmwk--Age 13 (1991 IAEP)	1.93	--	1.27	1.00	1.52
Time Devoted to Science					
Science Share--5th Grade (1971 FISS)	8%	2%	3%	3%	7%
Science Share--5th Grade (1982 SISS)	--	--	4%	--	10%
Science Share--9th Grade (1971 FISS)	8%	7%	8%	5%	10%
Science Share--9th Grade (1982 SISS)	--	25%	10%	--	20%
Hrs/wk Science Instr-Age 13-1991 IAEP	2.90	--	3.23	3.00	3.88
Hrs/wk Science Hmwk-Age 13-1991 IAEP	.68	--	.97	.65	1.06
Yrs with Same Teacher-Grd 4 (1991 IEA)	2.4	1.7	--	--	.8

Sources: FISS refers to First International Science Study, Passow, Noah, Eckstein and Mallea, 1976, p. 262 & 268. SISS is the Second International Science Study, Postlethwaite and Wiley, 1992, 14-33. SIMS is the Second International Mathematics Study, Robitaille and Garden, 1989, pp. 36 & 79. IAEP is the International Assessment of Educational Progress, 1992a & 1992b. IEA means it is taken from Lundberg and Linnakyla (1992, 20-25) analysis of the 1991 International Association for the Evaluation of Educational Achievement study of Reading.

ENDNOTES

1. McKnight *et al.* The Underachieving Curriculum. Champaign, Ill: Stipes Publishing Co. 1987, p. 124. The target population was all students in the grade (year level) where the majority have attained the age of 13:00 to 13:11 years by the middle of the school year. By the spring of the year when the test was taken, the mean age of the students was 14.1 for France, England and the United States, 14.0 for Scotland and 14.3 for the Netherlands.

2. International Assessment of Educational Progress, Learning Mathematics, 1992.

3. T. Neville Postlethwaite and David Wiley, Science Achievement in Twenty-Three Countries. London: Pergammon Press, 1992. The target population for the study was supposed to be all students aged 14.00 to 14:11 on the specified date of testing OR all students in the grade where most 14 year olds are found on the specified date of testing but some countries obtained permission to use older samples. The English students tested were considerably younger (14.2 years old) than students in the U.S. (15.3 years old) and the Netherlands (15.6 years old). If science scores are adjusted for age, England would probably rank ahead of Singapore, Israel, French Canada, Norway and Poland and thus rank somewhere in the middle of the distribution of countries.

4. International Assessment of Educational Progress, Learning Science, 1992.

5. Robert Thorndike, Reading Comprehension in Fifteen Countries. New York: John Wiley, 1973.

6. Warwick Elley, How in the World do Students Read?, International Association for the Evaluation of Educational Achievement, 1992, p. 14 & 24.

7. OECD, Education at a Glance, 1992, p.97. If GED certificates were counted as diplomas, American secondary school graduation rates would be higher. But the labor market does not view the GED as equivalent to a high school diploma. GED certified high school equivalents are paid 6 percent more than high school dropouts but 8 to 11 percent less than high school graduates. Most GED test takers spend little time preparing for the exam. The median test taker spent 20 hours preparing for the exam and 21 percent did not prepare in any way. Their ASVAB test scores are above those of other high school drop outs but significantly below those of high school graduates who do not go to college. (Cameron and Heckman 1993). Janice Laurence (1983 Table 1) found that their attrition rates from the military were equal to those of high school dropouts and twice the rates of high school graduates. Hence it is not appropriate to count GED certificates along with high school diplomas.

8. Since, vocational education is more expensive than traditional academic courses, providing vocational education through schools as is done in Sweden, Holland, France and the United States raises costs. Dual systems of education like the German, Austrian and Swiss systems arrange for employers to provide most of the vocational instruction and thus place lower demands on the taxpayer. In 1980, German employers invested an average of $6880 per year in the training of each apprentice they took on as part of the dual system of vocational training (Noll et al. 1984). The German government estimates that private expenditure on education of youth (almost all of which is employer spending on apprenticeship training of secondary school students) is equal to **1.9 percent of GDP** (OECD 1992, Table P1). This implies that German employers account for nearly half of the nation's spending on secondary education and that Germany spends about 60 percent more on students participating in secondary education than the U.S. does.

9. The share of school district expenditure that goes for instruction is 56 percent in Milwaukee Wisconsin and 55 percent in the District of Columbia (Fischer 1990, KPMG Peat Marwick, 1989). Howard Nelson's (1990) examination of this issue concluded that teacher compensation was between 45.5 and 53.5 percent of current expenditures in the U.S. These ratios are higher in most other OECD countries. The mean for OECD countries reporting this statistic was 62 percent (OECD 1992 Table P5). Ratios of teacher compensation to total expenditures are not available for France, the Netherlands and the United Kingdom, however.

10. Ministere de l'Education Nationale et de la Culture, Reperes and References Statistiques sur les enseignements et la formation. 1992 Edition, p. 205 & 206.

11. Since many countries fund pensions and medical insurance through mandated social security taxes, it is essential to include both voluntary and compulsory contributions for these purposes in the measurement of teacher compensation. Compensation of secondary teachers was calculated by multiplying their salary by the ratio of compensation to wages for manufacturing workers. This estimate of teacher compensation was then divided by average compensation of all workers. (Nelson and O'Brien, 1993, pp. 37, 74 & 93).

12. The salaries of British teachers rise more slowly than in other occupations, so 5 years after graduating their salaries are 35 percent below accountants, 32 percent below computer programmers and systems analysts and 22 percent below physical scientists. The gap is even larger in the U.S.

13. Bac Exams in mathematics, history/geography and and French are set and marked by 23 regional academies. School based assessments are used for other subjects (Madeus and Kellaghan 1991, p. 17).

14. The Ministry of Education sets an exam which has both essay and multiple choice components. The multiple choice component which represents half the written paper is graded centrally. With the aid of a marking scheme supplied by the Ministry, the essay component is marked by the student's own teacher and by a teacher from another school. Oral components are administered by the student's teacher.

15. The year prior to Hollingshead's arrival in town, the "Special College" scholarship had gone to Willa Cross, the daughter of a well to do Elmtown family, rather than Joe Brummit, a carpenter's son. In the view of an upper class male:

In my view she should not have received that scholarship. She kept that Brummit boy from going to college. Joe Brummit is a brilliant boy, and I think in many ways he was brighter than Willa Cross. My own personal opinion is that Henry Cross had his nerve to let Willa accept that scholarship if her work didn't actually justify it (p. 181).

The superintendent of schools commented on this incident as follows:

Henry Cross put a lot of pressure on me to see that Willa got the things they thought she should have. Henry Cross is a funny Fellow, and it's taken me a long time to learn how to get along with him.

[The Superintendent sat for a minute or two, leaned back in his chair, then went on in a whimsical way.]

I used to be a reformer and stood for strict ideals, but as I've grown older I've learned you have to give a lot and take a lot in this business. I don't mean to say I have abandoned all principles, but you have to work with people, and so at times you just have to wink at things (p. 183).

16. Publishing data on proportions of students meeting state targets on standardized tests probably speeds the process by which real improvements in a school's performance influence it's local reputation. However, other indicators such as SAT test scores, proportions going to various types of colleges and the socioeconomic background of the students tend to be more prominent. In Ithaca, New York, for

example, the promotional literature of the high school focusses on SAT scores, National Merit Scholarship awards, college attendance rates and AP test results, not the results on State mandated proficiency exams. Only the AP test results are directly related to the quality of teaching at the school.

17. Analysis of data on out of catchement school selections for the Fife LEA found that the Type B school effect estimates (measures of how well each school does compared to others serving pupils of similar ability and social background) are significantly and substantially higher at the schools selected by parents choosing to leave their catchement area. Douglas J. Willms and Frank Echols, "Alert and Inert Clients: The Scottish Experience of Parental Choice of Schools," Economics of Education Review, Vol 11, No. 4, 1993, 339-350. My summary sentence sounds different from Willms and Echols summary of their own results because they unaccountably base their conclusions on estimates of school effects from models which did not control for the pupil's ability when entering secondary school and which they acknowledge are biased. Luckily they also present results based on correctly specified models with controls for initial ability in Table 3 of the paper.

18. In the U.S. minimum competency tests are taken in ninth or tenth grade and most students pass them on the first sitting. Thus for the great majority of students, such exams have no further effect on incentives to study. Incentives effects are focused on the small minority who fail them on the first round.

19. Mark Tucker (1993) proposes establishing a single Year-way Certificate of Mastery representing a "truly world class standard" that "everyone is expected to meet." He argues that everyone could be brought up to this high standard by varying "the amount of instructional time in the day, week and year so that students who need more time to reach the standard have that time along the way, not just at the end of their career as a student." Most would attain this certificate at age 16 or earlier, some would take longer. The incentive effects of such a scheme will depend on its design and the size of the rewards for completing the Certificate. They will be very powerful if (1) assessment is external (ie. external examiners, not the classroom teacher, set and grade the exams and judge the portfolios that establish that the standard has been achieved) and (2) students who fall behind are compelled to devote additional time to study (either after school, during the summer or by repeating the grade) and (3) the increment in classroom time is substantial--at least 300 hours per year for some students. The possibility of losing free time generates powerful incentives to work hard in regular classes. If, however, participation in additional study time is optional, the incentive effects will probably be modest. Having a Certificate of Mastery would probably raise average earnings by only 4 to 8 percent and this is probably not enough to motivate most failing students to spend an additional 300 hours a year in classroom study. One could make the rewards greater by requiring school attendance until the Certificate is obtained and by making it a requirement for obtaining a high school diploma. This, however, generates political pressures to dilute the world class standard of the certificate.

20. In the U.K., access to 6th form programs preparing for university, vocational technical programs of various kinds and employment depend on the student's performance on the GCSE and Scottish Lowers. Since A level results are not available at the time initial university admission decisions are made, GCSE results influence which university and which field of study a student is admitted to. In the Netherlands the passing standard is high, but exceeding it by a large margin generates few rewards because the external exam results are only part of the student's overall grade and access to the most popular university fields of study is on a first-come first-serve basis. In addition, there is much less variation in the quality and reputation of Dutch universities than of British universities.

21. The Dutch word for *redoublier* is *blijven zitten* (verb) and *zitenblijvers* (noun). The literal translation of this word into English is "to stay in one's seat."

22. H. D. Lewis, The French Education System, p. 3.

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23. Ministere de l'Education Nationale et de la Culture, Reperes and References Statistiques sur les enseignements et la formation, 1992 Edition, p. 77, 93 & 99.

24. Ministere de l'Education Nationale et de la Culture, Reperes and References Statistiques sur les enseignements et la formation, 1992 Edition, p. 79, 91 & 99.

25. Some writers argue that tracking--assigning students to or letting them select courses of differing levels of rigor--causes low achievement and propose instead to require everyone to take the same subject in heterogeneously grouped classrooms. The evidence for this position, however, is weak. Slavin's (1988) review of the literature on tracking in secondary school found no effects of tracking on mean achievement levels. The Asian and European systems whose students regularly outperform American students have much more pervasive tracking systems than the U.S. It is neither feasible nor desirable for all senior high school students to take the same set of courses. While many nations have a common curriculum with no tracking in elementary school and lower secondary schools, no country requires all senior secondary students to take the same courses. Some students will want to pursue subjects like mathematics and science in greater depth and rigor than others. Some students will want to concentrate on technology not pure science. Some courses and programs will be easier than others and in a free society students and their parents will inevitably be able to choose between more and less demanding courses or programs. The kernal of truth in the anti-tracking literature is the observation that taking undemanding courses (ie. setting easy goals) results in lower achievement. What is distinctive about American schools is the lack of clarity about which track/program you are in and the consequent lack of rewards for pursuing a more demanding educational program. Low American achievement levels are not caused by the existence of courses of different rigor. They are caused by students avoiding demanding courses and the willingness of teachers to lower the passing standard of their course when a large share of students do not do the work or fail to learn the material.

26. For example, selective colleges give preference to students who take Advanced Placement courses. Seniors applying to selective colleges are aware of this and often sign up for AP classes. The AP exams come after colleges announce their admission decisions, however, so many students do not put the required energy into the course and decline to take the AP exam when the time comes. In Britain, colleges base their admissions offers on GCSE results and teacher predictions of how the student will do on her A levels. If the student does not achieve the A level grades that are predicted, the student may find that their admission to the specific university program is cancelled. Even though teacher predictions of A level grades are decidedly optimistic, few school leavers suffer this fate. Nevertheless, the possibility is enough to keep British students studying hard up through the A exam.

27. Surveys of college admission officers suggest they have recently increased the weight they attach to taking rigorous courses in high school and doing well in these courses. Grades in high school have always been the number one consideration. Standardized test scores have now become the second most important consideration displacing class rank. Class rank is becoming less important because an increasing number of high school are refusing to calculate class rank. (National Association of College Admission Counselors, 1993, as reported in the October 23, 1993 Ithaca Journal).

FRENCH SECONDARY EDUCATION

Outcomes--French students have high levels of achievement.

Numbers Graduating: The ratio of secondary school diplomas to 18 yr olds is 85% (compared to 75% in the U.S.).

Reading: French 9 year olds were ranked 4th and French 14 year olds were ranked second on the 1990/91 IEA study of Reading achievement in 32 countries (23 of which are industrialized).[1] Note that age is held constant so the high rates of grade repeating in France do not improve it's mean scores.

Mathematics: French 13 year olds ranked number 3 in the world (behind Japan and Netherlands) in a 1981/82 IEA study of achievement in 20 countries (17 of which were industrialized). The U.S. was ranked 14th in this study.[2] In the IAEP study in 1991, France ranks 6th of 16 industrialized nations studied behind Korea, Taiwan, Switzerland, Russia and Hungary and ahead of Israel, Canada, England, Scotland, Ireland, Slovenia, Spain, the U.S (a gap of about 1/2 of a U.S. standard deviation) and Portugal.[3]

Science: France is in the middle of the league table in science, significantly above Ireland but significantly below Korea, Taiwan and Switzerland.

Inputs--9.6 % of students are immigrants. Half of the immigrants are from North Africa. 6 % of students are from homes where French is not spoken, the same as the U.S.

Time in School-1991[4]	Instruct days/Yr	Minutes per day	Hours per year	Homework GT 2 hrs/day
France	**174**	**370 min**	**1073 hr**	**55 %**
United States	173	338 min	974 hr	30 %
England	192	300 min	960 hr	29.5 %
Switzerland	207	305 min	1052 hr	20.5 %
Northern Italy	204	289 min	982 hr	78.5 %
Canada	188	304 min	952 hr	26.5 %
Taiwan	222	318 min	1176 hr	42.5 %
Korea	222	264 min	976 hr	39.5 %

HISTORY

French education has a glorious tradition dating from Napoleonic times, but it has historically been slow to change. Albert Camus said in 1946:

> "The world is changing and with it both people and France itself. Only French education remains the same. So we teach our children to live and to think in a world which has already passed away.[5]

In 1946 only a small minority continued their education beyond primary school and secondary education was dominated by classical studies and mathematics. Only 5 percent of the age cohort obtained the *Baccalaureate*, the secondary school diploma which allowed a student to enter university.

Starting in 1959 France made a mighty effort to "democratize" schooling. Prior to 1958, the party divisions endemic in the 4th Republic had prevented major reform of education. One of the first acts of the new regime headed by Charles DeGaulle was an

ordnance extending compulsory schooling from age 14 to age 16. Prior to that date only 10-20 percent of the children of farmers and workers stayed in school beyond age 14 while 80-90 percent of the children of professionals and managers were continuing beyond that age.

> Structures of secondary schooling have been radically modified,• new pedagogical methods have been devised for making school more attractive to those ill-prepared for study, and plans have been adopted for continuing, or adult education....The slow steady erosion of the paramountcy of the classical curriculum to the advantage of the technical and scientific--biological, physical and human--subjects is perhaps the most obvious sign of movement away from a pedagogy of "cultivation" toward "specialized and expert schooling."[6]

Post 1959 Reforms

- The introduction of comprehensive state subsidy of private (primarily Catholic) schools. Teachers in private schools are paid by the government on the same salary scale as the public sector. This change in effect broke the public monopoly in the provision of subsidized schooling and gave parents the ability to choose the school their child attended. The private sector now accounts for 13.9 percent of primary school pupils and 21 percent of secondary school students.

- Adaptation of education to the needs of technology. The *Brevet de Technicien* was upgraded to a status equivalent to the *Baccalaureat*.

- Tried to democratize schooling and tailor it to the aptitude and taste of the individual. No longer would everyone be forced into a single classical model. A two year observation cycle was established at the beginning of lower secondary schooling after which the Orientation Council, the *Conseil de Class*, would recommend to parents what type of study was appropriate to the talents of their child. Parents were free to reject this recommendation and have their child take a public examination testing the aptitude of the child.

High Standards have been maintained despite the rapid expansion. It is said that the French are **"attempting to apply to a majority of pupils those criteria of success originally drawn up for a minority"**[7] Rather than lowering standards in current programs they have started new programs in economics and social science, technology and vocational subjects and tried to give these programs prestige comparable to the old Bac lines. While the public does not hold the professional lines in as high a regard, politicians and educational leaders publicly treat them as equal in respect and prestige. They want well prepared youth to enter the new vocational programs because they believe these fields are a key to French competitiveness. The old high prestige study lines have expanded in response to student demand.

Structure of the French System

Almost all children 3, 4 and 5 years of age attend pre-elementary schools. Instruction begins in earnest when they enter the 5 year primary school. This is followed by 4 years of comprehensive lower secondary schooling. Exhibit 1, *Organigramme*, describes the multiplicity of secondary and tertiary education pathways that exist in the French system. General/academic education programs are indicated by white boxes; occupation specific and vocational education programs are indicated by grey boxes. In the past large numbers of students left general education at the beginning of eighth grade to enter occupation specific training programs (the CEP and CAP). These programs have or are being rapidly phased out, so very shortly, occupational specialization will not be allowed until tenth grade, the year following the completion of lower secondary schooling. Since the youth who choose vocational education typically have repeated at least one grade, the occupation to prepare for is generally not chosen until the youth is 16 or 17 years old.

College d'Enseignement Secondaire--Four year lower (*premiere cycle*) secondary school--
These four year middle schools were originally tracked generally into :
transition (to vocational studies), **moderne** and **classique**
Colleges became **comprehensive** (ie. mixed ability classes) after the 1974 Haby reforms.

Size and Organization--*Colleges* in the public sector have an average of 21 classes (5 per grade level with an average of 24 pupils) and 510 pupils. One third of students attend colleges with more than 700 pupils. Private *colleges* are smaller; they average 342 pupils.[8] Students are formed into heterogeneous classes and take almost all of their classes together. With the exception of the turnover caused by repeating grades, the class remains intact the following year. Reshuffling of the classes sometimes occurs at the beginning of the third year because some schools allow specialization at this stage and because most students are starting a second foreign language at this time. All students are required to take at least one foreign language and 86 percent of the time the first foreign language is English. Latin is taken by 28 percent of the pupils.

Admission to *college* is now based almost entirely on where you live. If too many students from a neighborhood want to attend a particular school, the borders of the district are revised or the school is expanded. Almost all lower secondary students attend the local *college*. Schools in heavy demand (like the one's I visited) may have some choice over those who replace students who leave. Class size at the most popular schools appears to go to the upper limit allowed.

Homework is 1 hour per day in the first year (referred to as *sixieme*) of *college*. In the final two years of *college* homework is 1.5 hours a day.

Lycee--3 year academic and technological Upper (*Le Second Cycle*) Secondary School--
Public *Lycee generale and technologique* are typically quite large--33.4 classes (ie. 11 classes per grade with a mean of 31 pupils per class) and 1210 students on average. 80 % of public sector *lycee* students are in *lycees* with more than 900 students. Private *lycee* are smaller--only 24 % of private *Lycee* students are attending schools with more than 900 students and mean class size is 26.[9]

Admission: Admission to *Lycees* with top reputations is quite competitive. Reputations are largely based on past Bac results which are published in national newspapers. Selection is based on the student's dossier (a thick file folder of grades and teacher reports). Since students in *college* are not externally assessed, the reputation of one's *college* inevitably comes into play. The geographic region from which *lycee's* must recruit are much larger than the *colleges*. The schools I visited gave priority to students from their associated *college*, but they advised *college* pupils they did not feel could make it to go elsewhere. This means that the chance of getting into many of the better *lycee* is enhanced by living in the attendance area of the *college* associated with the *lycee*. About half the intake into the two *Lycee* I visited was from other *colleges* and there was also an intake at the end of the first year to replace those who move away or switch to another school. The geographic region from which they recruited these other students amounted to about one-quarter of all of Paris. They had 150 applicants for 60 places.

Standards--The first year of *Lycee* (referred to as *seconde*) is a big challenge for students. Expectations are much higher than in *college*. The pace is faster. Homework is now 3 hours a day. Since the 1981 reforms all students in the *Lycee* take the same courses during *seconde*. Specialization occurs in the second year of *Lycee (premiere)*. While three or four primary lines of study tend to be offered at most *lycee*, other fields and sub specializations such as art and music are available only at certain *lycee*. This means that one must choose one's *lycee* with one's specialization in mind. Each line leads to a different package of *Bac* exams.

Most *Lycees* offer three or more lines of study and at most two or three classes in an age group pursuing a particular line. **Students take almost all their subjects with other members of the class (mean size 31 pupils). Once they have selected their line, a class will stay together from one year to the next with the exception of redoubling.** Classes within a line are organized to keep those taking the same languages together.

Large choice of programs of study--

The major categories are:	Number of Baccalaureat Exams Passed[10]				
General Bacs	1950	1960	1970	1983	1992
A. Literature & Lang.	17,186	23,334	64,502	45,108	73,363
B. Economics & Soc. Sci	0	191	11,304	39,287	67,864
C. Math-Physics-Chem.	7,474	17,061	21,443	31,566	63,912
D. Biological Science	6,747	15,443	36,011	51,505	63,718
E. Math & Technology	955	3,248	5,447	5,960	8,616
Technical Bacs (BT)					
F. Various Tech & Voc	0	0	11,081	30,043	44,545
G. Economics--Vocat.	0	0	17,465	43,054	77,578
H. Information Science	0	0	54	701	221
Professional Baccalaureats	0	0	0	0	46,112
Total	**32,362**	**59,277**	**167,307**	**246,523**	**445,929**
Share of the cohort obtaining a Bac	5%	10%	20%	30%	51%

Clearly, the number of students taking and passing the Bac has increased dramatically. The pass rate was 71.6 % in 1992, significantly higher than the 65 % pass rate of 1975. In 1992

623,171 students took the Bac Exam--a number that is roughly equal to the total number of students in the terminal year of *lycee* and the 2nd year of Bac Professional programs in the LEPs. The government has set a goal that 60 % of the age cohort prepare for and pass a Bac exam by the year 2000. It appears likely to reach this goal since the share of the age cohort obtaining a Bac has risen from 43 to 51 percent in just two years since 1990. Not all of this rise is due to the introduction of the Professional Bac; the share getting a general or technological Bac rose from 40.8 % to 45.7 %.

The Mathematics-Physics-Chemistry Line (C) is the most difficult, carries the greatest prestige and keeps open the option of going to a preparatory school for one of the *Grandes Ecoles* (elite post-secondary colleges comparable in prestige to Harvard). **MATHEMATICS IS KING OF THE CURRICULUM.** It is the rigorous mathematics studied in C which distiguishes it from other lines. By the end of *terminale* year, students in C have covered trigonometry, differentiation, integration, vectoral space, functions, limits, probability, statistics (standard deviation, means), and matrix algebra. Despite the more difficult curriculum, 80 % pass the Bac exam for C. This compares to a 63% pass rate in economics (B). Admission to the C line within a *lycee* is highly competitive.

Study lines in France and many other European countries are similar to speciality based schools-within-a-school magnets in the U.S. Even though students from different lines share the same building and mix together in some subjects, the members of a class take most subjects together and friendships develop primarily within their class and class norms are often distinctive. The different lines have a tracking effect, but since they are based on the student's choice of field of study (rather than a smart/dumb or high/low distinction), public discourse about the lines by educational leaders and teachers treats them as equal in respect. Lines are more than a response to different interests and types of talent among students. They are also one of the ways European school systems deal with the fact that some 15 year olds are willing and able to tackle much more difficult material than others, while simultaneously trying to minimize the invidious distinctions between those who choose more or less difficult programs of study. The fact that classes are formed around subjects of study rather than a high/low student ability distinction, also helps maintain the morale of the teachers of the less able students. Teachers of social studies (or a vocational subject) may complain about their inability to attract the best students into their major, but their belief in and love of their subject induces them set high standards and to do the best they can with the students who specialize in their field.

The greater prestige of the C line inevitably induces some of the students who are good in all subjects to select C because of the doors it opens rather than because of love for the subject or talent. Critics often bemoan this behavior. I see nothing wrong with it. Math has prestige both because it is viewed as difficult (there need to be rewards for taking on difficult lines of study) and because it increases the probability of success in further education. Mathematics is an essential tool in engineering, science, business and the social sciences, so a strong mathematics background contributes to success in university. Most countries have a surplus of people with advanced education in the humanities and the result for these graduates is low wages and low probabilities of finding work that makes use of what was studied in university. As long as the prestige hierarchy is sending signals which correctly guide young people into fields where employment demand is strong and social

benefits are high, there is no problem.

When, however, a society invests great prestige in fields such as classics which prepare one only to teach the subject, serious problems are created. In the 1950s Latin or Greek was required in the A line and the A line had great prestige. The result was that bright students felt they had to distinguish themselves in Latin or Greek. At that time the prestige signal was directing students into paths that made little contribution to the economy and that reinforced class distinctions. The elitist character of the 1950s Bac was reduced by adding economics and social science lines, technical lines and now professional (vocational) lines.

Mentions on the Bac--22% of those who pass the Bac exam recieve a *mention* of some kind. Fewer than 1 % recieve the top honor-*Tres Bien*. *Bien*, the second highest honor, is obtained by 4 % and *Assez Bien*, the third highest honor, is obtained by 17 %. Fewer *mentions* are awarded for technological Bacs than for general Bacs. Consequently, pursuing the C line is not the only way to distinguish oneself; going for a *mention* in A, B or G is an alternative.

Trends in Academic Standards--Literature (A) line--stable or down
Economics and Social Science (B) line--disagreement
Math and Physical Science (C) line--stable or up

Reforms being Implemented in 1993 and later

The program of study for students following A, B, C, D and E is to be the same in *the seconde*, the first year of *lycee*, so as to postpone the selection of academic line until the beginning of *Premiere*. In addition C, D and E are merged (by having otions within a new broader science line) thus increasing the amount of mathematics taken by those pursuing the life science line. Students in the literature line will be required to study two foreign languages, more philosophy than other lines, but not required to study mathematics. Students in the economics and social science line will take 3 hours of applied math in *premiere* and 4 hours in the terminal year. Students in the science line will take 5 and then 6 hours of theoretical mathematics.

Lycee d'Enseignement Professionnel (*LEP*)--are upper secondary schools for vocational subjects. Students prepare for three different types of external examinations: *Brevet d'Enseignement Professionnel* (BEP), the *Certificat d'Aptitude Professionelle* (CAP), and the *Baccalaureat Professionnel*. Public LEPs have on average 20.4 classes and 537 students. Private LEPs average only 178 students. In the public sector, only 21 % of LEP students are in schools with more than 700 students.[11] LEPs are "therefore sometimes able to create a feeling, if not of intimacy, at least of belonging, something which is absent from the other types of *lycee*."[12]

One year vocational programs during the 9th year of schooling that led to the *Certificat d'education professionnelle* (CEP) were common after WWII, but are now completely phased out. The 3 year *Certificat d'Aptitude Professionelle* (CAP) program which began in the 8th year of school and finished which students completed at age 17 or 18 is being phased out. It had 409,402 students in 1985, but only 86,744 in 1991/92. In its place the government is pushing the 2 year *Brevet d'Enseignement Professionnel* or BEP (a more

generic, less job specific vocational credential than the CAP) which begins in the 10th year of the student's schooling and is typically completed when the student is 18 or more years old. BEP's are available in over 50 different fields. Enrollment in these programs has risen from 170,000 in 1970/71 to 486,198 in 1991/92. A small number of students are obtaining 2 year CAPs. In 1990, the pass rates was 70.6 % on the 2year BEP and 75% on the CAP.[13]

In addition, in 1985 a 2 year program of vocational study was instituted which picks up where the BEP and the CAP leave off and leads to a *Baccalaureat Professionnel*. By the time students enter the second year of the Professional Bac course 55 percent of them are 20 years old or more. The intention of this reform is to upgrade the prestige of the vocational studies and to raise standards in vocational programs. Since the Bac is required for admission to university, it also gives those who pursue a professional line the option of continuing their education. The pass rate on the Bac Pro was 76 % in 1992.

Redoublement

Repeating a grade, *redoublement*, is very common in primary schools, *colleges* and *lycee*. In 1979 only 15 percent of those entering the first year of elementary school were over age. Five years later, in 1984, 42 % of the first year class of lower secondary school (*college*) were over age. In 1987, a further three years later, **50 %** the students in the final year (*troisieme*) of lower secondary school were over age. Still another three years later, in 1990, **65%** of students in the *terminale* year of *lycee* were over the theoretical age. In other words, about half of the students who are in the final year of an academic track high school have repeated at least one year of school. Because those who redouble tend to shift over to vocational lines of study, even higher in the students at professional lycee are over the theoretical age. In the second year of BEP and CAP programs (presumably the 11th year of schooling), **93%** of students are over the theoretical age and **58%** are more than one year over age.[14]

Trends in *redoublement*: *College* grade repeating rates were between 6.5 and 9.5 % in the middle of the 1970s. They rose over the course of the next decade reaching 9.4 to 16.4 in 1985/86. In that year *Lycees had redoublement* rates of 17.8 % in *seconde*, 12.7 % in *Premiere* and 19.9 % in *terminale*. Government policy is to reduce grade repeating and statistics indicate that it is having some success. In the two *colleges* I visited, grade repeating has been restricted to year 2 (*cinquieme*) and 4 (*troisieme*) year of college. In 1990/91, national *redoublement* rates for general and technological programs were:

8.6% in *sixieme of college* (parents can veto)
11.0% in *cinquieme of college*
6.8% *in quatrieme of college* (parents can veto)
9.6% in *troisieme of college*.
15.9% *in seconde of lycee*
12.1% in *premiere of lycee*
18.4% in *terminale of lycee*

Vocational programs have lower grade repeating rates.

6.0% in the first year of 2 year BEP and CAP programs in LEPs
10.9% in the second year of 2 year BEP and CAP programs in LEPs
1.4% in the first year of the Bac Professional program
5.0% in the second year of the Bac Professional program[15]

Even top public *lycees* serving upper middle class communities have high grade repeating rates (14 percent of *Lycee Charlemagne's seconde* class repeated). Some are offered the chance of switching to one of the easier lines of study but prefer to redouble in hopes of making it into C. Others may switch to another school at this point in order to get into the C line. The teacher's "basic motivation is to help the child himself, to ensure that the pupil is sufficiently well prepared so that he may fully benefit from work at a more demanding level."[16] To the teachers *redoublement* is a form of Mastery learning. When I asked how the students who must redouble feel about it, I was told that they feel "**dishonored.**" The desire to avoid this fate is probably one of the reasons why French teenagers study harder than their counterparts in Britain and the U.S.

Conseil de Class--In both *College and Lycee*, decisions about placement of students are made by the *Conseil de Class*. Each classroom of 25 or so students has its own Conseil which meets at least once at the end of the year. Reforms which created these *conseil* were a response to the 1968 general strike. The *conseil* includes parent representatives (generally two) and the teachers of the primary subjects for the class. The parent representatives on the *conseil* apparently tend to defer to the teachers. For the *sixieme and quatrieme years of college* the *conseil* decision is advisory only, the parents must agree. Parental approval is not required in other years. If the parents of a child disagree with the *conseil's* decision, they may appeal the decision to the *Proviseur* (or principal). The *proviseurs* interviewed said that such appeals were rare, but that some decisions had been reversed. Parents who lose the first round appeal may take the issue to an appeals board which contains only one representative from the school.

Choices at the end of *Lycee*

29,663 high achievers (median age 19) enter *Classes Preparatoires aux Grandes Ecoles*, two year schools which prepare students to compete for the limited number of places in the ***Grandes Ecoles***--small high prestige post secondary institutions specializing in engineering and business which are the route into fast tract positions within business and the civil service. The top *lycee* generally have a preparatory school attached to them. Only 1/12th of those who apply to preparatory schools are accepted. Bac results for French (which is taken at the *end of premiere*) and the reputation of one's *lycee* are important factors in that decision. Priority is not given to applicants from the associated *lycee*. Mathematics competence is the key to doing well on the exams for admission to the *Grande Ecoles*. This is the primary reason why the C line is chosen by the best students.

107,552 enter *Sections de Techniciens Superieurs* (STS), selective 2 year programs which train for specific occupational specialities.

University: Passing the *Baccalaureat* confers eligibility to enter university. Some fields of study are over subscribed and *numerus clausus* has been introduced to ration these fields. Admission decisions are made prior to the receipt of results of the Bac exams but they can be revised if the student does better (or worse) than expected on the Bac. Factors considered when *numerus clausus* is operating are grades in first quarter and previous year, reports of teachers and the French Bac.

In the first two years, classes are extremely large and failout rates are substantially above 50 percent. In the Economics program at Paris II only 6 percent of entrants receive the *maitrise* (a degree that normally takes 4 years). Students who fail out of one field of study often try a different generally easier field of study. Fail out rates are much lower for those who studied the C line in *lycee*. Studying economics and social science (B) in *lycee* does not help because the curriculum is controlled by geographers, sociologists and political scientists so the economics taught has little mathematics and is not neo-classical.

Sports--Students are required to take two hours of physical education per year. The *Lycees* I visited were urban and lacked large playing fields, but they did sponsor sports teams.

Discipline--The *Proviseurs* (school principals) I talked to reported they did not have discipline probelms [note that the schools I visited served students from upper middle class backgrounds]. They were, however, rather large encompassing 1700 students (including the attached college and preparatory school) in the case of Charlemagne and 120 staff in the case of *Lycee Jean de la Fontaine*. *Fontaine* had not had to suspend a student for four years. Charlemagne had a disciplinary council made up of teachers, parents and students. Absenteeism and lateness goes on the student's record. Discipline problems were reported to arise only with teachers who "lack authority"--This trait was reported to be negatively correlated with the academic demands that the teacher places on students.

Peer pressure: The *proviseurs* I talked to reported there was a small amount of peer pressure against studying in *college* classes and none in *lycee* classes.

Teachers are employees of the Ministry of Education, not the school. Entry into the profession is controlled by examinations. Educational requirements for *lycee* teachers are higher than for teachers at primary schools and *colleges*. Salaries are determined by their credentials, tenure and evaluations of their teaching performance made by inspectors. The *Lycee's proviseur* evaluates the teacher's administrative efficiency but have no formal involvement in the evaluation of teaching performance. The salary schedule is collectively bargained on a national basis.

The ministry decides who is assigned to which school. Teachers are not moved unless they seek a transfer. Openings are announced and all certified teachers who apply are considered. Prized appointments tend to go to the teacher with greater tenure and good teacher evaluations, so the better and more experienced teachers tend to end up at schools serving upper middle class neighborhoods (just as in the U.S. and Britain). The *Lycee's proviseur* has no formal role in the selection of the school's staff. **These features of the French system effectively insulate teachers from local and parental pressures which might cause them to dilute standards.**

French secondary school teachers (particularly those in lycees) view themselves as "teaching the subject not the pupil." The pace of a lycee class is not slowed when some students are having difficulty keeping up. The class as a whole must achieve the Bac standard and those falling behind will be expected to repeat the year.

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